



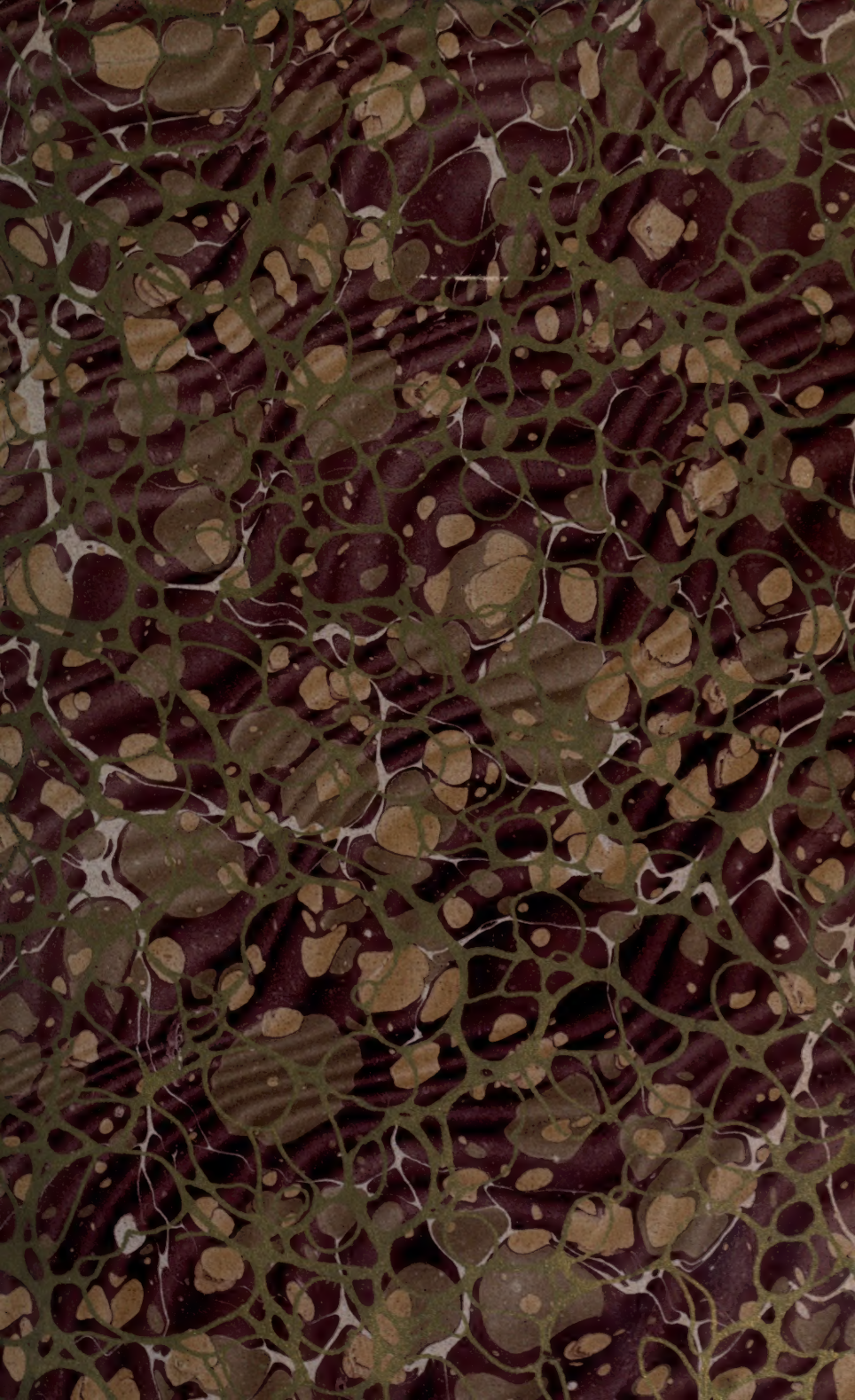




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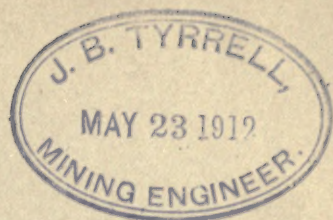
J. B. Tyrrell. Pres.

























Tech  
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Proceedings  
of the  
Mining and Metallurgical Society  
of America



VOLUME IV

1911

35.787 / 38.  
20. 5.

Published at the Office of the Secretary  
505 Pearl St., New York.





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#### NOTE BY THE SECRETARY.

The numbering of this volume is arbitrary. It is called Vol. IV in order that it may correspond with the fourth year of the Society. The previous publications have been bound in two volumes, to which no special numbers were given. The first of these comprised bulletins 1-18, covering 1908 and 1909; and the second comprised bulletins 19-31, covering 1910.





# Mining and Metallurgical Society *of America*

Bulletin No. Thirty-two  
February, 1911

## OFFICERS FOR 1911.

*President*, J. PARKE CHANNING, 42 Broadway, New York.

*First Vice-President*, F. W. BRADLEY, Crocker Bdg., San Francisco, Cal.

*Second Vice-President*, CHARLES W. GOODALE, Butte, Mont.

*Secretary*, W. R. INGALLS, 505 Pearl St., New York.

*Executive Committee*, MESSRS. H. M. CHANCE, J. PARKE CHANNING, W. R. INGALLS, B. B. LAWRENCE, R. H. RICHARDS.

## COUNCIL.

Districts 1, 2, 3.—New York City.

B. B. Lawrence, 60 Wall St.....Retires January, 1912.

J. Parke Channing, 42 Broadway.....Retires January, 1913.

W. R. Ingalls, 505 Pearl St.....Retires January, 1914.

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District 11.—Northwestern States, Alaska and British Columbia.

C. W. Goodale, Butte, Mont.....Retires January, 1913.

District 12.—Colorado and New Mexico.

Philip Argall, Denver, Colo.....Retires January, 1914.

Districts 13, 14, 15.—Utah, Nevada, California, Arizona and Mexico.

F. W. Bradley, San Francisco, Cal.....Retires January, 1912.

J. C. Branner, Stanford University, Cal.....Retires January, 1913.

S. B. Christy, Berkeley, Cal.....Retires January, 1913.

## OFFICERS OF SECTIONS.

### NEW YORK.

#### SAN FRANCISCO.

S. B. Christy,  
*Chairman.*

H. F. Bain,  
*Secretary.*

Geo. C. Stone,  
*Chairman.*

E. G. Spilsbury,  
*Vice-Chairman.*

A. L. Walker,  
*Secretary.*

#### PHILADELPHIA.

R. H. Sanders,  
*Chairman.*

F. Lynwood Garrison,  
*Secretary.*



## MINUTES OF THIRD ANNUAL MEETING.

The third annual meeting of the Society was held at the Engineers' Club, New York, on Tuesday, January 10. Twenty members were present in person and 62 by proxy, this constituting more than a quorum. The meeting was called to order at 3 p. m. by W. R. Ingalls, councillor, who stated that the president, J. Parke Channing, was obliged to be out of town on account of business, and that neither vice-president was present. Calling for the election of a chairman, Dr. H. M. Chance was proposed, and there being no other nomination, Dr. Chance was declared elected by acclamation. Dr. Chance took the chair.

The Secretary, H. S. Munroe, read the minutes of the previous meeting. These were approved as read.

The reports of the Treasurer, of the Secretary and of the Executive Committee were read and were accepted by vote of the meeting. These reports are printed separately in this Bulletin.

The Chairman then called for the report of the tellers of the election for councillors. The Secretary reported that the President had previously appointed Professors Peele and Walker as tellers of election; that the tellers had met and canvassed the sealed letter-ballots at noon, January 10; and that they had certified the election of the following as councillors: W. R. Ingalls, districts 1, 2, 3; R. H. Richards, district 4; F. Lynwood Garrison, districts 5, 6; Waldemar Lindgren, district 7; H. V. Winchell, district 8; and Philip Argall, district 12. The terms of these councillors expire in January, 1914, except that of Mr. Lindgren, who was elected to fill the unexpired term of S. F. Emmons, resigned, retiring in January, 1912.

Upon call of the chairman for new business, the Secretary referred to the discussion in the Executive Committee respecting a modification of the by-laws to simplify the procedure of the Society in dropping members for non-payment of dues and introduced an amendment to By-law 5 that had been drafted. In order to bring this before the meeting, this amendment was moved by W. R. Ingalls, whose motion was duly seconded.

## MINING AND METALLURGICAL SOCIETY OF AMERICA

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After some discussion and some minor changes in phraseology, this resolution was adopted, with some dissenting votes, in the following form:

"The executive committee of the Council may drop from membership any member more than one year in arrears for annual dues after he shall have received notice of his delinquency."

Under the by-laws of the Society, this resolution will come up for further action at the adjourned meeting, February 16.

The Secretary called attention to the action of the Council in approving the proposal for the annual award of a gold medal by the Society. W. R. Ingalls moved the adoption of the resolution already approved by the Council, as follows:

"RESOLVED, that the Mining and Metallurgical Society of America award annually, under rules to be subsequently formulated by the Council, a gold medal valued at \$100 to the person who, in the opinion of the Society, has done most during the previous year to advance the arts of mining and metallurgical engineering, said medal to be awarded without regard to membership in the Society."

This motion was duly seconded.

Considerable discussion arose upon this resolution. The Secretary stated that the action of the Council upon it had not been unanimous. It was suggested in the meeting that it might be preferable to award a medal occasionally rather than annually. Also that it might be advisable to award a medal in some particular field in one year, and in another field in another year. Inquiries were made as to the conditions under which this medal would be awarded, and as to the method of decision. W. R. Ingalls explained that the action of the Council in this matter had been no further than to approve the proposal in principle, and that it was certainly contemplated that whatever rules might be formulated would be laid before the whole membership of the Society, and that the award of medal would be by the membership. Mr. E. B. Kirby said that the proposal of the Council to award such a medal was an

excellent idea, that it would do much to increase interest in the Society, and that the resolution before the meeting should be adopted. After some further discussion, the question was put and the resolution as presented was adopted unanimously.

The meeting then adjourned to 8:30 p. m.

The members gathered for dinner in the club at 6:30 p. m. Those present were Messrs. Chance, Chauvenet, Conner, Griffith, Huntoon, Ingalls, Irving, Jennings, Kirchhoff, Lewis, Munroe, Norris, Parker, Parsons, Payne, Peele, Richards, Sanders, Spilsbury, Stoughton, Sussman, Thacher, Townsend, Van Mater and Walker. After dinner, time was given for a brief meeting of the New York Section. The Society then convened in the second session of its annual meeting, Dr. Chance presiding.

After opening the meeting, the Chairman announced that at the meeting of the Council, following the first session, H. S. Munroe had resigned from the Council, on account of his intended absence from the country, that B. B. Lawrence had been elected to succeed him, and that the following officers had been elected for 1911:

**President**, J. Parke Channing; **1st Vice-President**, F. W. Bradley; **2d Vice-President**, C. W. Goodale; **Secretary**, W. R. Ingalls; **Treasurer**, B. B. Lawrence; **Executive Committee**, Messrs. Chance, Channing, Ingalls, Lawrence and Richards. [Mr. Lawrence subsequently declined his election as treasurer].

The second session was devoted chiefly to informal addresses upon technical subjects. Mr. S. J. Jennings, who was the first speaker, took as his theme the subject of waste. He referred to the losses of material that are suffered in our mining and metallurgical practice, and called attention to a loss that was generally neglected, viz., the loss of time and waste of effort that are involved in doing the same thing over and over again. This is due largely to the absence of reports of failures as well as of successes. The latter are almost always put on record; not so the failures. But if they were, much time and money would be saved in the avoidance of misleading paths. Mr. Jennings concluded with a plea for conservation in this respect.



Following Mr. Jennings, Professor Walker described a new process of melting cathode copper under a cover of boron trioxide, i. e., fused borax glass, which in some mysterious way deprives the copper of oxygen, or rather prevents copper, while in a molten condition from absorbing oxygen. The copper treated by this process, which is being experimented upon on a large scale by one of the big copper refineries, acquires a higher degree of conductivity than ordinary electrolytic copper, and the process offers other advantages from an operating standpoint. The doubtful points in the process, however, are the chance for volatilizing borax glass which is used as the cover, and the extra amount of heat required to melt copper under such a non-conducting cover. Professor Walker exhibited specimens of metal and slag and after suggesting a theory for the action of boron trioxide in this connection requested other explanations, but none were offered.

At the request of the chairman, Professor R. H. Richards presented the results of some laboratory experiments by his students in the comparative results obtained in classification under free-falling and hindered-settling conditions, respectively. He described the laboratory apparatus, which consisted of a galvanized-iron spitzkasten with 12 classifying tubes on the lower side. The tubes in the free-falling classifier were two inches long, of one-half inch diameter, and were without constriction of any sort. In the hindered-settling classifier, a titer chamber, one inch diameter and two inches deep, was placed above the classifying column, which was of the same size as in the other classifier. By comparing the results obtained on screen analysis of the several products, the hindered-settling classifier was proved to perform much more perfect classification than the free-falling classifier. The concentrates were nearly all recovered in a nearly pure state, the tailings were all rejected almost devoid of heavy mineral, and only a small quantity of middlings resulted.

Mr. S. H. Chauvenet next described the occurrence of tin ore at Camp Florella, near El Paso, Texas, and the development operations that he is carrying on at that place. An animated discussion of some of the problems involved in this enterprise followed. Mr. Chauvenet added to the interest by showing samples of ore and products, including one of pig tin that has already been made in Texas. Mr. Ingalls described briefly, in answer to an inquiry of Mr. Chauvenet, the occurrence of tin in Durango, Mex., which he said was in rhyolite tuff and quite

different from the occurrence near El Paso, as described by Mr. Chauvenet and indicated by his samples.

Mr. A. R. Townsend, who has lately returned from Mexico, gave a brief account of the recent revolutionary events in that country, which he characterized as being of more consequence than some of the members present had previously been disposed to think.

Mr. Ingalls referred to the discussion of the report of the Committee on the Prevention of Mine Accidents by the Society during several months previous, and suggested that this discussion would doubtless continue for some time to come, and that certainly it would be a long time before the Society could express itself upon this subject. In the meanwhile, a movement is going on in several States that is contrary to a vital recommendation of the Committee, viz., the appointment of mine inspectors. In the tentative constitution of Arizona, a provision for the election of the mine inspectors has already been incorporated. In Montana an effort is now being made to have the inspectors elected instead of appointed; and in another State, some agitation of the same kind is going on. Mr. Ingalls suggested that it would be well for the Society, in advance of action upon the Committee's report, to put itself upon record respecting the simple and clear-cut question of appointment vs. election of inspectors. He presented a resolution signed by 23 members of the Society as follows:

"RESOLVED, that in the opinion of the Mining and Metallurgical Society of America, State Inspectors of Mines should be appointed, and should not be elected."

Mr. Ingalls moved the adoption of this resolution, and his motion having been duly seconded, was carried unanimously. Under the by-laws, this resolution will come before the entire membership of the Society, in the usual way.

Votes of thanks to the retiring officers (the Secretary and the Treasurer) for their services to the Society during the previous three years were moved, and carried unanimously.

The meeting was then adjourned, to meet again at the Engineers' Club, New York, February 16, at 8 p. m.

W. R. INGALLS, *Secretary*.

## SECRETARY'S REPORT.

The following report for 1910 is respectfully submitted:

### Growth of Membership During 1910:

Total membership, January 1, 1910.....	163
Members elected during 1910, including one returned to membership after having resigned.....	31
Died .....	2
Dropped for non-payment of dues.....	1
Declined to accept election.....	1
Resigned .....	3
	<hr/> 7
Annual gain .....	24
Total membership, January 1, 1911.....	187
Candidates now before the Council on List No. 16.....	8
Candidates now before the Society on List No. 17.....	5
Applications pending .....	6

The revised By-law, by which the election of members has been entrusted to the Council, has now been in operation for 16 months. The applications for membership have been carefully scrutinized by the Executive Committee and the records of applicants have been submitted to the membership for consideration. As a result of this careful scrutiny it is believed that the Society has been fully protected and that this is the case is amply substantiated by the high quality of the additions to our membership during the year.

**Meetings of Sections.**—The New York section of the Society held nine meetings, the Philadelphia section six meetings, and the San Francisco section eight meetings during 1910 and, including two meetings of the Society, we have had a total of 25 meetings for the year. The subjects discussed at these meetings included the Inspection of Mines, the Federal Bureau of Mines, the Rights of Stockholders in Mining Companies, Filtration of Liquids and Gases, the Drying of Concentrates, Porphyry Copper Deposits, the Better Organization of the Work of Mining Students and Graduates at Mines and Metallurgical Works, the Origin and Deposition of the Paleozoic Rocks, Uniform Mining Laws for the Prevention of Mine Accidents, Working Methods at the Loetschberg Tunnel.

The San Francisco section held two field meetings, one at Grass Valley, with sessions at the Empire mine and at Nevada City, and another at Los Angeles, with excursions to Mojave and to Bakersfield.



**Bureau of Mines.**—The subject of the establishment of a Federal Bureau of Mines was submitted to the Society for letter ballot on the several questions involved. The results of this ballot are given on page 271 of the Bulletin. It appears that 40 per cent. of the members sent ballots to the Secretary, showing a very general interest in the matter. On the important questions the vote was very close, but on none of the questions was the necessary majority vote of the whole membership recorded in the affirmative.

**Incorporation of the Society.**—In accordance with a resolution introduced at the last annual meeting, the Council has procured the incorporation of the Society under the laws of the State of New York. As the committee appointed to draw up the Constitution and By-laws had this step in mind from the beginning, no change in organization or management was found necessary to comply with the law regarding such incorporation. One important result of this step is that both officers and members are relieved from any personal liability resulting from any action which may be taken by the Society, and that the liability is now limited to the actual property of the Society.

H. S. MUNROE, *Secretary.*

## TREASURER'S REPORT.

The following report of the finances of the Society for 1910 is respectfully submitted:

CR.	Cash on hand January 1, 1910.....	\$1,045.26
	Annual dues received for 1909.....	60.00
	Annual dues received for 1910.....	1,783.00
	Annual dues received for 1911.....	10.00
	Received from New York Section in settlement of account....	27.05
	Received for back numbers of Bulletin.....	.44
	Total .....	\$2,925.75
DR.	Printing Bulletins, Lists, etc.....	\$677.32
	Salary of Assistant Secretary-Treasurer.....	470.00
	Stenography and typewriting .....	185.79
	Postage, telegraphing and expressage.....	79.23
	Stationery and office supplies.....	36.05
	Bills paid on account of New York Section.....	68.65
	Bills paid on account of Philadelphia Section.....	14.00
	Auditing accounts of the Society.....	10.00
	Bank exchange .....	2.93
	Total expenditures .....	\$1,543.97
	Cash on hand January 1, 1911.....	1,381.78
		\$2,925.75

## MINING AND METALLURGICAL SOCIETY OF AMERICA

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The Society has no liabilities. Its assets include:

Cash on hand .....	\$1,381.75
Unpaid dues .....	110.00
Receivable on account of Sections.....	3.33
Office furniture and supplies.....	20.00
Total assets .....	<u>\$1,515.11</u>

The Treasurer's report for 1908 will be found on page 52, and for 1909 on page 185 of the Bulletin. Gross income and expenses for the first three years of the Society's existence compare as follows:

	1908 (7 mos.)	1909	1910
Gross income.....	\$1,200.00	\$1,605.75	\$1,880.49
Total expenses.....	<u>691.50</u>	<u>1,068.99</u>	<u>1,543.97</u>
Excess of income..	\$ 508.50	\$ 536.76	\$ 336.52
Cash bal. on hand.	\$ 508.50	\$1,045.26	\$1,381.78

The two largest items of expenses are the salary of the Asst. Secretary-Treasurer, and the cost of printing the Bulletin, lists of candidates, ballots, etc. The cost of printing in 1910 was \$677.32, against \$380.10 in the preceding year. In explanation of this increase, it should be noted that the whole number of pages of Bulletin matter printed in 1910 was 316, as compared with 129 pages in 1909. We are now printing editions of 750 copies of each Bulletin, whereas 250 were formerly ordered. Printing of the Bulletin is done on contract, which was submitted to competitive bidding, and I am confident that the price is as low as could be expected.

At item of expense appearing for the first time in 1910 is "Section Aid," authorized by the Executive Council. Under this arrangement, the Treasurer of the Society pays on demand, two-thirds of the expense incurred by any local Section for stenographic reporting of its meetings, provided that the amount so paid shall not exceed one-half the dues paid into the general treasury by the members of that Section, nor exceed \$100 in any one year. The amount paid in 1910, under this provision, was \$52.27. This expense is likely to increase during coming years.

W. R. INGALLS, *Secretary.*

## REPORT OF EXECUTIVE COMMITTEE.

During 1910 the Executive Committee passed upon 42 applications for membership which were submitted to the Society in Lists Nos. 11 to 17 inclusive. Two applications have been withheld from ballot, but all other candidates whose names were submitted have been elected. One candidate, however, declined to accept his election to the Society.

At the present time, all communications received from members regarding the qualifications of candidates are held in strict confidence and, in order to prevent any accidental disclosure of such communications, the custody of the letters is entrusted to the Secretary, who communicates the substance of such letters to the Executive Committee without disclosing the name of the writer. While this plan is effective for the purpose designed, it is open to some objections and may have to be modified in the future.

The Executive Committee has had under consideration the reprinting of the bulletins issued during the past two years in more permanent form. For the present, however, with the small income and membership of the Society and the expense of such republication, it has been thought best to postpone the matter for future consideration. Provision has been made, however, for completing and binding all the files in possession of the members of the Society.

The Executive Committee has also had under consideration various matters affecting the By-laws and Regulations of the Society as a result of which several amendments and resolutions have been drafted for submission to the Society.

H. S. MUNROE, *Secretary*.

## PRESIDENTIAL ADDRESS.

The published proceedings of the Society for the past year indicate the variety of topics that have come before it, and show the widespread interest that the discussion of these matters has aroused among the members.

Our Society is, of course, in a formative stage and much latitude has been given, and must be given, to the scope of



its activities. Discussions as to ethical questions arising in the practice of the members, and the more practical questions of reports by operating companies to their stockholders, and the framing of laws for the protection of employees have been taken up, and are still the subjects of discussion.

While one object of the Society is to gather together into a single organization members of the profession who are qualified by knowledge, experience and honorable standing, yet the mere aggregation of members without contact either by meetings or by the circulation of printed proceedings would not of itself amount to much. Many of our members are in isolated places, where it is impossible to organize sections, and these men must be made to feel that their views are to be consulted in outlining the policy of the Society, or in passing upon special subjects.

To a certain extent the various sections themselves are isolated as regards one another, and it is not to be expected that their discussions can always run along parallel lines. In fact it would be unfortunate if they did, for it would not bring out the varying points of view due to differences of environment; still much can be done by coöperation among the various sections when it is desired to have an early expression of opinion upon some subject by the Society as a whole. An example of this may be seen in the discussion of the new uniform law for the prevention of mine accidents.

At present we have but three working sections, with headquarters respectively in New York, Philadelphia and San Francisco. To all of the meetings of each section some men can be present because their work is very largely in the city; others can only be present at occasional meetings, but the desirability of attending every meeting he possibly can should be impressed upon each member, not only for his own edification, but for the influence which he will have upon his associates. Matters should be so arranged that the man who is out in the field, and who comes to one of the larger cities should know of the meetings of the sections, so that he may be able to attend, and perhaps meet those men whom he has previously known only by reputation or correspondence. We are all apt to build up conceptions of individuals based on insufficient data, and a little personal contact will do a great deal toward straightening out

these conceptions, and toward making us appreciate the good points of our confreres in the profession.

Mining engineers, unlike lawyers, are not brought into daily contact, and hence there is a tendency at times toward narrowness in judging one another, and one way in which we can come together is by attending the meetings of the sections and entering into their discussions. The social features of the Society are not to be neglected, and experience has shown beyond a doubt that having the discussions follow a dinner does much to promote good feeling and a free exchange of ideas.

In the various discussions and exchanges of experience in the meetings extreme latitude must be given to the expression of opinions by individuals, as it is clearly understood that these opinions are not binding upon the Society until they have been approved as a whole, and nothing should be done to stifle the opinion of any individual. No doubt in time we shall be able to arrange a method by which the opinions of different sections or of different members may be exchanged in the shortest period of time.

It should be the aim of the Society ultimately to have its membership include all who are eligible under the constitution, so that membership in the Society will have a certain weight with the mining community, and with those interested in mining. To-day the mere possession of a degree from some institution of learning is by no means a guarantee of a man's standing in his profession, and on the contrary there are many men high in every profession who have never received any degree, and such will always be the case. It is for the Mining and Metallurgical Society of America to make for itself a name that will be synonymous with knowledge, experience and honorable standing. While it is desirable that we should increase our membership as rapidly as possible, we should not err in the direction of mere numbers, and on the contrary we should be extremely careful that our personal prejudices against any individual does not stand in the way of his becoming a member of the Society. The cut of a man's coat, his politics or his religion should not be considered, but only the questions, Is he an honorable member of the profession and has he sufficient experience to warrant his election to the Society? We have progressed in the last two years slowly but surely, and though

we have had some differences of opinion as to the best methods of procedure, yet as a whole our progress has been in the right direction, and if we continue with a unity of purpose there is no reason to doubt that in time we shall achieve all that our Constitution stands for.

J. PARKE CHANNING, *President*.

### NEW YORK SECTION.

MEETING OF JANUARY 10, 1911.

After dinner at the Engineers' Club, at which 24 members of the Society were present, a meeting of the New York section was called to order by Mr. Ingalls, chairman. The minutes of the previous meeting were read and approved. On the ground that his election to the position of Secretary of the Society would demand much of his time, Mr. Ingalls tendered his resignation as chairman of the New York Section, which was accepted. On motion, duly seconded, Mr. George C. Stone was elected chairman to succeed Mr. Ingalls. The meeting then adjourned.

A. L. WALKER, *Secretary*.

### PERSONALS.

W. H. Aldridge has resigned his position as manager of the Consolidated Mining and Smelting Company of Canada at Trail, B. C., to take a position with W. B. Thompson, whose mining interests he will supervise. He has been appointed managing director of the Inspiration Copper Company.

N. H. Darton, for many years connected with the U. S. Geological Survey, has been appointed geologist of the U. S. Bureau of Mines with headquarters at Washington. He will continue his investigations of the geological conditions under which explosive gases occur in coal beds.

Charles C. Derby, consulting mining engineer, has removed from Virginia City, Nev., to Nevada City, Cal.

J. R. Finlay has resigned his position as general manager of the Goldfield Consolidated Mines Company and will return to New



York to resume practice as consulting engineer. He will first go to Miramar, California, where he will spend two months.

C. H. Munro has gone to London.

Otto Sussman has returned from a European trip and has gone to Butte, Mont.

H. W. Turner writes from London that he has made an engagement to examine copper mines in Russia, and will not return to this country until later in the year.

Walter Harvey Weed has been examining the Butte-Balaklava property at Butte, Mont.

A. H. Wethey has retired from the management of W. A. Clark's properties in Montana, and will make his headquarters in New York.

Pope Yeatman is planning to go to Chile to inspect the Braden property.

## OBITUARY.

Robert Forrester, of Salt Lake City, died at Seattle, Wash., Dec. 20, 1910. Mr. Forrester was born in Scotland, 46 years ago, and was graduated with honor at the University of Edinburgh. He came to America soon after his graduation and became engaged in geological work in the coal regions of Pennsylvania. In 1889 he removed to Utah, and early in the '90s was appointed coal mining inspector for Utah Territory. He was the originator of the coal mine inspection laws when Utah was granted statehood. After retiring from his inspectorship, he became occupied as geologist and consulting engineer for the D. & R. G. railway, the Western Pacific railway and as consulting engineer for the Utah Light and Railway Company. At the time of his death he was geologist for the Utah Fuel Company, a position that he had filled for many years previously. He was greatly esteemed for his sterling character and for his professional ability. He was a charter member of the Mining and Metallurgical Society of America, and was also a member of many other technical societies.

## MEMBERS ELECTED IN JANUARY.

- Caetani, Gelasio.....Crocker Building, San Francisco, Cal.  
Consulting Mining and Metallurgical Engineer.
- Catlin, Robert M.....Franklin Furnace, N. J.  
Engineer, New Jersey Zinc Co.
- Keating, John B.....Winthrop, Shasta Co., Cal.  
Manager, Bully Hill Copper Mg. & Smg. Co.
- Loring, Frank C.....Home Life Bldg., Toronto, Ont.  
Consulting Mining Engineer.
- Metcalf, G. W.....Kennett, Cal.  
Manager, Mammoth Copper Mining Co.
- Smith, George Otis.....Washington, D. C.  
Director U. S. Geological Survey.
- Sutton, Linton B.....165 Broadway, New York City  
Consulting Mining Engineer.
- White, Robeson T.....Coram, Shasta Co., Cal.  
Manager, Balaklala Cons. Copper Co.

# Mining and Metallurgical Society *of America*

Bulletin No. Thirty-three

March, 1911

Vol. IV, No. ii



## OFFICERS FOR 1911.

*President*, J. PARKE CHANNING, 42 Broadway, New York.

*First Vice-President*, F. W. BRADLEY, Crocker Bdg., San Francisco, Cal.

*Second Vice-President*, CHARLES W. GOODALE, Butte, Mont.

*Secretary*, } W. R. INGALLS, 505 Pearl St., New York.  
*Treasurer*, }

*Executive Committee*, MESSRS. H. M. CHANCE, J. PARKE CHANNING,  
W. R. INGALLS, B. B. LAWRENCE, R. H. RICHARDS.

## COUNCIL.

Districts 1, 2, 3.—New York City.

B. B. Lawrence, 60 Wall St.....Retires January, 1912.

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District 8.—Michigan, Wisconsin and Minnesota.

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C. W. Goodale, Butte, Mont.....Retires January, 1913.

District 12.—Colorado and New Mexico.

Philip Argall, Denver, Colo.....Retires January, 1914.

Districts 13, 14, 15.—Utah, Nevada, California, Arizona and Mexico.

F. W. Bradley, San Francisco, Cal.....Retires January, 1912.

Leonard S. Austin, Salt Lake City.....Retires January, 1912.

S. B. Christy, Berkeley, Cal.....Retires January, 1913.

## OFFICERS OF SECTIONS.

### NEW YORK.

#### SAN FRANCISCO.

S. B. Christy,  
*Chairman.*

H. F. Bain,  
*Secretary.*

Geo. C. Stone,  
*Chairman.*

E. G. Spilsbury,  
*Vice-Chairman.*

A. L. Walker,  
*Secretary.*

#### PHILADELPHIA.

R. H. Sanders,  
*Chairman.*

F. Lynwood Garrison,  
*Secretary.*

## ANNOUNCEMENTS.

Up to the present time the bulletins of the Society have been published only with a date and a serial number, no special arrangement for binding in volumes having been made. It has seemed desirable now to contemplate such binding and imprint the bulletins with a volume number. The imprint for the current volume will be IV., corresponding with the year of the Society's existence.

**Election of Members.**—The Secretary is in receipt of inquiries as to the status of the applications of certain candidates for membership as to which there has been delay. Under the by-laws an applicant is bound to refer to three members of the Society, and until they have been heard from no action can be taken. The most common cause of delay is the reference to some member who may be absent in a remote part of the world. When the three endorsements have been received the papers go before the Executive Committee, usually a matter of 10 days, and in the event of favorable action by the committee the name of the candidate is submitted to the membership along with the next following bulletin, after which 30 days must elapse. If no objections be presented the name then goes to the council for ballot, which usually requires about 30 days. Consequently about 75 days must elapse, under the most favorable circumstances, between the filing of complete papers and election, but the time from original application may be greatly prolonged by delay in completing the papers, as remarked above.

**Membership.**—The membership of the Society January 1, 1911, was 187. Since then 13 new members have been elected, one member who had resigned recalled his resignation, and one member has died. The total membership, March 1, 1911, is 200. Seven candidates are before the Society, and seven applications are pending. According to the by-laws an initiation fee of \$25 comes into force after the membership has attained the number of two hundred and fifty.

**Bound Volumes of Bulletins.**—The Society has not heretofore made provision to supply members with bound volumes of its bulletins. An edition of sufficient number is now being printed to provide each member with a complete set at the end of the year and a reservation is being made for that purpose.

**Back Numbers of Bulletins.**—The matter of reprinting the proceedings that have been published in previous numbers of the

bulletin, or of reprinting those bulletins whereof the supply is exhausted was recently considered by the Executive Committee, with the decision that neither plan should be adopted until a considerable number of members have expressed a desire to be supplied with the complete proceedings. Announcement to that effect was made in bulletin No. 30. Only a few requests for the complete proceedings have been made. At present these can not be granted for the reason that bulletins Nos. 1, 3 and 26 are out of print. Members possessing duplicate copies of those bulletins are requested to send them to the Secretary.

**Index.**—An index to the bulletins of the Society published during 1910 is mailed with this issue. This index covers bulletin No. 31, of date January, 1911, which reported the December proceedings.

**Prevention of Mine Accidents.**—Since attention was drawn to this subject by the report of the committee now under discussion by this Society, two important mining companies, viz.: the Goldfield Consolidated (then under the management of J. R. Finlay), and the Cleveland-Cliffs Iron Company (M. M. Duncan, manager), have inaugurated private systems of inspection for their own mines upon the lines of the proposals of the committee.

### COUNCIL.

At a meeting of the Council at the Engineers' Club, New York, Feb. 16, W. R. Ingalls was elected Treasurer of the Society in place of B. B. Lawrence, who had declined his election.

The resignation from the Council of J. C. Branner was received and accepted. Leonard S. Austin, of Salt Lake City, was elected councillor to fill the vacancy, his term expiring in January, 1912.

It was voted that the Council appoint a committee of delegation of the Mining and Metallurgical Society to attend the forthcoming meeting of the Canadian Mining Institute at Quebec. The following committee was appointed: Mr. Channing (chairman), Mr. Lawrence (vice-chairman), Mr. Garrison, Mr. Ingalls and Professor Kemp.

The Secretary stated that he had arranged to print a regular edition of 600 copies of the bulletin and was reserving the number requisite to provide every member with a bound volume at the end of the year. He estimated that about 500 copies would be required for members, leaving 100 to go to other societies and



to constitute a small surplus. Upon motion, duly seconded, the printing of an edition of 600 copies was approved.

Attention was called to defects in the Constitution and By-Laws of the Society that had become apparent in the practical working of its affairs, among those being the necessity of simplifying procedure in acting upon questions of general interest. Upon motion, duly seconded, the Executive Committee was instructed to give consideration to these matters, and others that it may deem advisable to consider, and draft such amendments as may be desirable and submit report to the council at the earliest possible date.

## MINUTES OF ADJOURNED MEETING.

An adjourned meeting of the third annual convention of the Society was held at the Engineers' Club, New York, Thursday, Feb. 16, at 8.45 p. m. Members present were Catlin, Chance, Corning, Cowles, Garrison, Ingalls, Peele, Parsons, Riordan, Sharpless, Spaulding, Spilsbury and Townsend, while 66 members were represented by duly executed proxies. The total number present in person and by proxy was 80, this constituting a quorum. In the absence of the President and both Vice-Presidents the meeting was called to order by Dr. H. M. Chance, who had been elected chairman at the previous meeting.

Upon motion of Mr. Spilsbury, duly seconded, the minutes of the meeting of Jan. 10, as printed in bulletin No. 32, were approved.

The Chairman stated that the purpose of this adjourned meeting, arranged in conformity with the eighth article of the Constitution, was to consider proposed amendments to the By-Laws and resolutions adopted at the meeting of Jan. 10, notice of the action at the meeting of Jan. 10 having been sent by the Secretary to all members of the Society 30 days in advance of this meeting.

The Chairman stated that the first matter to come before the meeting was the proposed amendment of By-Law No. 5, relating to annual dues, by adding the words: "The Executive Committee of the Council may drop from membership any member more than one year in arrears for annual dues after he shall have received notice of his delinquency."

**The Secretary.**—I have received a number of communications from members of the Society upon this subject. Without exception these communications have been favorable to the proposed change. I have had letters from nine members who are not here this evening.

**Mr. Corning.**—I wrote a letter to the Secretary about the matter and suggested that for the convenience of the Committee its action with respect to delinquent members should be mandatory rather than permissive.

**The Secretary.**—Perhaps it will help consideration if I report the experience in the collection of dues. About 50 per cent. are received within a month after the first notices are sent out. A second notice will be sent along with the March bulletin and during the next following month probably about 25 per cent. of the members will respond. Of the remaining 25 per cent. the majority will remit in a scattering way during the rest of the year and at the end of the year there will be about 10 members delinquent. Probably they will be members absent in some remote part of the world, whence it is difficult to make remittances. Such delayed remittances usually come in during the early months of the following year. This has been the experience during the history of the Society.

**Mr. Corning.**—I am thinking of a communication that I received not long ago from a friend in Thibet. This was two months in getting to New York. There is hardly any place in the world further away than that. This was a letter registered in the ordinary way. If I were a member of the Executive Committee I should feel much relieved if action in this particular were automatic.

**The Chairman.**—The proposed amendment reads "Any member more than one year in arrears after he shall have received notice."

**Mr. Corning.**—Receipt of notice would have to be proved.

**The Chairman.**—I judge from the remarks just made by the Secretary that the effect of this amendment would be for the Executive Committee to take action in cases of arrears for two years rather than one. Is that idea correct?

**The Secretary.**—That is the way the amendment would work.

**The Chairman.**—We have no provision in our By-Laws that permits the Council to reinstate a member. It might be advisable to add a provision covering that point to the present amendment.

**The Secretary.**—In the absence of any specific provision, reinstatement might be discretionary with the Council.

**Mr. Spilsbury.**—I move that the amendment be adopted as read.

This motion, having been seconded by Mr. Stone, was carried unanimously.

**The Chairman.**—The next matter to come before the meeting is the proposal to amend By-Law No. 14 so that the last sentence will read "Other matters may take the same course, by majority vote of members present at any meeting, or by direction of the presiding officer, or by vote of the Council, except that resolutions having the approval of a majority of the Council, or endorsed in writing by 20 members, may be submitted to letter ballot without discussion at any meeting." The object of this amendment is to accelerate expression of opinion by the Society on matters of pressing importance. Under the present system, a resolution of this character must be presented at one meeting, placed before the entire membership for 30 days, discussed at another meeting and finally submitted for letter ballot for 60 days, after which the result may be announced.

**Mr. Spilsbury.**—I move that this matter be laid on the table.

**The Chairman.**—This motion is evidently made in view of action taken by the Council at the meeting this afternoon. Consideration will be helped if the Secretary will report that action.

**The Secretary.**—The Council voted that the Executive Committee be instructed to consider a number of questions that seem to make it advisable to make certain changes in the Constitution and By-Laws. The Executive Committee was directed to report at the earliest possible date. The matters brought to the attention of the Council cover the substance of this proposed amendment.

**The Chairman.**—In view of that action of the Council it is probably desirable to defer action upon the amendment now before us.



**Mr. Garrison.**—I second the motion of Mr. Spilsbury.

The question having been put, Mr. Spilsbury's motion was carried unanimously.

**The Chairman.**—The third matter to come before this meeting is the resolution that has been acted upon favorably by the Council and adopted at the previous meeting of the Society, as follows: "Resolved, That the Mining and Metallurgical Society of America award annually, under rules to be subsequently formulated by the Council, a gold medal valued at \$100 to the person who, in the opinion of the Society, has done most during the previous year to advance the arts of mining and metallurgical engineering, said medal to be awarded without regard to membership in the Society."

**The Secretary.**—I have received several communications with respect to this proposal from members not present this evening.

**The Chairman.**—Will you please read them.

The Secretary then read the following communications:

**S. M. Buck.\***—I do not approve this resolution at the present time. I would favor waiting until the Society is better established. At present the award of such a medal might be regarded as an advertising scheme.

**J. H. Pratt.\***—I approve very highly of this resolution, believing that its adoption would be one of the best steps that the Society has taken.

**W. F. Robertson.\***—I think that this would be a good thing if the Society has the money; otherwise not.

**E. R. Buckley.\***—I do not approve of this resolution, but I would approve of the establishment of a fund of which the proceeds would be used for the annual award of a medal. This fund would grow from year to year and the value of the medal to be awarded would increase from year to year. I am firm in my opinion that this is the wise way to proceed.

**E. V. d'Invilliers.\***—Upon this resolution I should decidedly vote in the negative. I do not think that with the present membership or existing surplus funds the Society is in any way

\* Communication.

justified in offering an annual gold medal of the value of \$100. Praiseworthy and consistent as such a recognition by the Society would be to the advancement of the arts of mining and metallurgical engineering, I am decidedly of the opinion that the Society would be anticipating its income and could make better use of it in building up its resources and advancing the privileges of its own membership rather than to divert its funds in this manner just yet.

**H. F. Bain.\***—I am glad to see that it is proposed to offer an annual gold medal. It seems to me an excellent thing to do.

**The Secretary.**—Some other members expressed themselves simply in the affirmative or negative. Of 10 letters received six were in favor of the proposal and four against it. Professor Christy wrote me that he was going to send a communication opposing it, but I have not yet received anything from him upon the subject.

**Mr. Cowles.**—A medal of bronze would carry as much honor as any other medal. Why should the Society give a gold medal?

**Mr. Garrison.**—Why is it necessary to specify that the medal be valued at \$100?

**The Chairman.**—Difficulty might be overcome by leaving the award of a medal to the discretion of the Council, specifying that the value shall not exceed \$100.

**The Secretary.**—This matter was first introduced by the Executive Committee, which acted favorably upon the proposal. It was then referred to the Council and approved by a majority thereof by letter ballot. It was next brought before the annual meeting of the Society on Jan. 10 and approved. Following the annual meeting a circular-letter about it was sent to every member. Under the Constitution and By-Laws action is to be taken at the present meeting, but even this action is not final. The question must still go before the whole membership for letter ballot. Action at the present meeting will be rather that of a committee than action by the Society. Assuming that the resolution be adopted at this meeting and later by the Society as a whole, I anticipate that it will be a matter of two years before rules and regulations can be settled and any action taken in the way of an initial award. The resolution now before us covers simply the question of principle. I move to amend the resolution by amplifying the second clause to read "under rules to be

\* Communication.

subsequently formulated by the Council *and approved by a majority vote of the Society.*" [The amendment consists of the words italicized.]

This motion, having been seconded by Mr. Spilsbury, was carried unanimously. Mr. Stone then moved, Mr. Sharpless seconding, that the resolution be adopted as amended. This motion was carried, with some negative votes.

**The Chairman.**—The last business to come before this meeting is action upon a resolution reading as follows: "Resolved, that in the opinion of the Mining and Metallurgical Society of America, State inspectors of mines should be appointed, and should not be elected." This resolution was introduced at the meeting of Jan. 10 upon a petition signed by 23 members of the Society, and was unanimously adopted at that previous meeting.

**The Secretary.**—I have received several communications with respect to this resolution from members not here to-night, which I will read if the meeting desires.

Such a desire having been expressed the Secretary read the following communications:

**J. H. Pratt.\***—I believe the best results are accomplished when State inspectors are appointed rather than elected.

**J. T. Beard.\***—I favor this resolution with all my heart but would go a step further and make the office appointive by a judicial court upon the application of any inspector holding office at the time of making application and for five consecutive years previous to the same; this appointment to be for life or for a specific number of years, to be determined by the court in its discretion, and subject to revocation by the court for cause. This suggestion is intended to remove this important office from the operation of the spoils system as far as lies in our power, and to retain for the benefit of good mining the most successful and able inspectors who have proved their ability by years of service, and whose acquaintance with this work should be available for future good.

**W. F. Robertson.\***—After an experience of 13 years as technical adviser to the Government of British Columbia, and consequently in a position to see the workings of inspection laws and inspectors from an inside but disinterested standpoint, I am

\* Communication.



thoroughly in accord with this resolution and opposed to the election of inspectors. An inspector is a technically qualified policeman for the special industry, to see that the laws are carried out. See to his qualifications by examination if you like, but if he has to be elected he has got to "fish for votes," and his bait will be a promise of partiality in some way. The appointing power is the Government, and that is elective, which is far enough. It would be on a par with the election of judges and policemen. We all know how that works out. The permanently appointed judges of the United States and their courts command the highest respect, and their judgments are regarded, even in foreign countries, as among the best in the world, but I cannot say that this extends to the elected judges or court officers. An eminent legal authority said in effect: Show me a popular judge (trying to win popularity) and I will show you a dishonest judge.

**E. R. Buckley.\***—I approve of this resolution, but it should not carry with it the inference that mining inspectors should be appointed by the Governor. I believe that they should be elected by a non-partisan board.

**E. V. d'Invilliers.\***—I heartily concur in this resolution. If the State inspector of mines should be appointed by a responsible power after full consideration of qualifications, I think that our Society would have accomplished much in furthering the welfare of the community.

**R. V. Norris.\***—In relation to the resolution proposed at the annual meeting of the Society in regard to State inspectors of mines, I do not think this goes quite far enough. Not only the State inspectors but also the district inspectors should certainly be appointed. Under the original mining laws of Pennsylvania, the district mine inspectors were appointed by the Governor, after examination and recommendation by a board of examiners appointed by the local courts, with the result of obtaining in almost all cases excellent men for the positions. Under the present law the district mine inspectors are elected, but are only eligible for a place on the ballot after passing an examination before a board appointed by the courts. This has not in all cases resulted in obtaining the best men, as many excellent men objected to going through a campaign to obtain a position of this sort. The chief inspector of mines is still appointed by the Governor and confirmed by the Senate.

**The Secretary.**—I have received a number of other letters that merely express themselves in the affirmative. All of the

\* Communication.

communications that have come to the Secretary's office have been in favor of this resolution.

**Mr. Corning.**—I agree fully with the opinions expressed by Mr. Robertson, namely, that if we are going to advocate appointment rather than election, it would be wise to give some idea as to who is to do the appointing.

**Mr. Spilsbury.**—If we do more at this time than recommend the appointment of inspectors we probably would not fare very well. We are aiming simply to express our opinion upon the broad principle of appointment versus election. I move the adoption of the resolution.

Mr. Spilsbury's motion, having been seconded by Mr. Stone, was carried unanimously.

There being no further business the meeting was then adjourned.

## MEETINGS OF SECTIONS.

### NEW YORK.

The regular monthly meeting of the New York section was held at the Engineers' Club, after dinner on Thursday evening, February 16. The following members were present: Messrs. Catlin, Chance, Corning, Cowles, Garrison, Ingalls, Parsons, Peele, Riordan, Sharpless, Spaulding, Spilsbury, Stone and Townsend, with Messrs. Brown and Mercer as guests. The meeting was called to order by Mr. Stone, Chairman, who appointed Mr. Sharpless as Secretary pro tem, in the absence of the regular Secretary. The minutes of the previous meeting were read and approved.

**Mr. Stone.**—We were occupied at the last meeting with a discussion of the proposed law for the prevention of mine accidents. In our previous discussions we have taken action on this law section by section, and if there is no objection, or no suggestions for changes, we will proceed with the next section.

#### *Sec. 34.—Cages for Hoisting Men.*

**Dr. Chance.**—It seems to me that this section is deficient, as it makes no provision for shafts less than 300 feet deep. A mine may be worked for years at a depth of 200 or 250 feet.

**Mr. Catlin.**—My personal opinion in regard to the door is that I would prohibit a door or anything of a loose nature on a cage. As regards safeties, a committee was appointed in the Transvaal to look into the application of safety devices. I was a member of that committee for over a year, and at the time I left the Transvaal the preponderance of opinion was against them; where alleged safeties operated in one case, they failed to operate in another case. Exhaustive experiments were tried with samples of the various safety appliances, and I think in every case but one they failed when tested.

**Mr. Spilsbury.**—I think the specifications for the cage are certainly unnecessary. For instance, the steel side casing. I do not think there is any need at all for casing in a cage.

**Mr. Corning.**—The sides of the cage should be 5 feet high. This would give ample protection, and yet allow for escape, as a man could climb over the sides.

**Dr. Chance.**—I think a great many of the accidents on cages occur from overcrowding.

**Mr. Catlin.**—The overcrowding is more apt to occur in a small mine. I think it would be a good plan to have a skip tender.

**Mr. Spilsbury.**—In a large mine it is the practice to have a skip tender.

**Mr. Catlin.**—The bell is also a complicated matter. I would put in such a system that only the skip tender could signal the driver.

**Mr. Ingalls.**—To go back to the subject of safeties, would you recommend that no provision be made for safeties?

**Mr. Catlin.**—I should not. The only safety I know of is a good rope. A good rope carefully, not superficially, inspected. It was found by investigations conducted at a mine with which I was connected that acid water greatly deteriorated the strength of wire rope, although the wires gave no evidence of corrosion.

**Dr. Chance.**—I might recall an experience of my own for which I was personally responsible. Many years ago I equipped a small mine. I did not want to go to much expense and so I did not put in any safety clutches. The shaft was only 150 ft. deep. One day in the winter I was on the cage and was coming down. When about 50 or 60 ft. down, the rope began piling up



above me. There was ice in the shaft and the cage had caught. Fortunately I was able to signal and was raised to the surface. That cured me and I put on safety clutches.

**Mr. Catlin.**—From the great volume of statistics about the breaking of ropes, it appears that a very large percentage of the breaks occur on the down travel.

**Mr. Spilsbury.**—The general experience is, from the statistics that I have seen, that about 64 per cent. of the breaks occur on the down travel. I believe this is due to the rebound and the shock and the pulsations in the shaft.

**Mr. Corning.**—I move that the committee be requested to reconsider this section, following the suggestions that no cages should have doors, and that the sides shall be 5 ft. high. This motion was carried.

The meeting then adjourned at 11 p. m.

F. F. SHARPLESS, *Secretary pro tem.*

In the following communication, Mr. Catlin presents more in detail his views on the proposed mining law, referring particularly to his experience on the subject of hoisting, gained as a member of the Transvaal committee appointed to consider this matter.

**R. Catlin.\***—My criticism involves the whole scheme, to which I am decidedly opposed, as I believe that in creating offices and regulations aimed to compel a more careful attention to the safety of the operatives, it will be impossible to keep these offices free from political taint. Having had abundant experience as to what a burden such officers can be if incompetent, intemperate or venial, I should hesitate long before voluntarily subjecting the industry to the possibilities of such conditions. However ingeniously you may attempt to prevent the offices from becoming the spoils of political victories, I know of no way that has succeeded, or is likely to succeed, in removing them beyond the reach of politicians.

My criticism of Section 34, discussed at the last meeting of the Society, is that I regard as too exacting the specifications for a cage therein contained. They practically call for an enclosed box, with hinged lids and two gates. I can imagine no more complete death trap than such a device would prove should an

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\*Communication.

engineer, as has frequently happened, lower into the sump by mistake. No one could scale the smooth walls to open the lid of the box.

In view of the constant care necessary to keep rivets tight on a cage, I should prohibit doors, rather than require them. I have seen a great many kinds, but never a door that I would not consider a distinct menace. I would gladly welcome any safe and practical device to protect the occupants of a cage from contact with the shaft walls, but believe that this protection should not extend higher than 4 feet.

In reference to the experiments with acid water on wires, I have in my possession the original wires tested in our research laboratory. After 12 hours' immersion in acid water, the wire broke on the fourth turn, with a very ragged fracture. The untreated wire broke on the forty-third turn, showing a perfectly even twist in the fibre and a square sheared section, very bright, with a small tit center or neutral axis. Mr. Caldecott made further experiments and Messrs. Vaughan and Epton afterwards investigated the matter quite thoroughly and discussed the same in a paper which was read before the Transvaal Institute of Mechanical Engineers. I append a copy of some remarks by Mr. Caldecott on the subject.

*Notes by W. A. Caldecott on Deterioration of Hoisting Ropes  
Subjected to Acid Water.*

The references to the influence of absorbed hydrogen upon the toughness of steel wires, contained in Messrs. Vaughan and Epton's valuable paper, are of great interest, especially in view of the relatively slight amount of attention hitherto paid to this factor by investigators, with the exception of Howe.

The importance of the question is perhaps increased by the fact that no apparent change is visible on inspection of a steel wire whose physical properties may have been profoundly altered by internal changes of structure brought about by absorbed hydrogen, whereas in the case of actual external corrosion the fact is apparent at a glance. I have had many tests carried out, of which a few may be quoted to illustrate one or two interesting facts in a field of research much needing further investigation.

The apparatus used for the bending tests was the ordinary standard form with two curved faces of  $\frac{1}{4}$  in. radius; the wire

was bent back and forward, so that the traverse of 180 deg. counted as one bend. The torsion test was made on an 8-in. length of wire, suspended vertically, and supporting a 61-lb. weight; one complete revolution of 360 deg. counted as one twist. All wires were cleaned by caustic soda solution before immersion in the acid solution.

When steel wires, unprotected by a preservative coating, are in contact with a solution of free sulphuric acid, even though extremely dilute, as in the case of acid mine water, sulphate of iron is formed and the liberated hydrogen is partially absorbed or occluded by the metal. The result is that, after immersion in the acid solution, less than one-quarter the usual number of twists may be required to break the wire, as compared with untreated wires, although the wire has undergone no appreciable corrosion and the tensile strength is but little affected.

Wires made of "Delta metal" or of "silicium bronze," after immersion in dilute acid, do not show any brittleness due to absorbed hydrogen.

The following tabulation shows the number of twists required to break 8-in. lengths of wires, 0.101 in. diameter, of "best plough steel," taken from an unused rope. Some of the wires were tested without acid treatment and others after immersion, for the number of hours specified, in a dilute sulphuric acid solution maintained at 0.03 to 0.04 per cent.  $H_2SO_4$ :

	Average.
Twists required to break untreated wires, 31, 30.5, 33.5, 31, 31, 32....	31.5
After 14 hours' immersion, 13, 12 11.....	12
After 15 hours' immersion 4, 6.....	5

Some new wires of 0.1008 in. diameter were immersed for 24 hours in acid water from the shaft of a mine on the Central Rand, which had the following composition:  $H_2SO_4$ , 0.0086 per cent.;  $FeSO_4$ , 0.018 per cent.;  $Fe_2(SO_4)_3$ , 0.022 per cent. Five-inch lengths of the wire required 22, 21 and 20 twists respectively to break before this treatment, and 14, 15 and 14.5 twists to break after treatment. On an average of four tests in each case, 21.6 bends were required to break the wires before immersion, as above, and 9.8 bends after.

Boiling acid-treated wires in water for three hours apparently restores the toughness so far as the torsion and bending tests are concerned. For instance, new wires as above described, which had been reduced by immersion in dilute acid, from an average of 31 twists to 13 twists, required, after boiling in water



for two hours, the following number of twists: 36.5, 31.5, 31.0, 25; average 31. Similar wires, reduced by acid treatment from 31 twists to 4 twists, required, after three hours' boiling in water, the following number of twists: 32, 35, 29; average 32. Similar new wires, which had been reduced by eight hours' immersion in 0.025 per cent.  $\text{H}_2\text{SO}_4$ , from an average of 23 bends to 10 bends, required the following average number of bends before breaking, after boiling in water (rendered just alkaline with caustic soda) for the periods specified: 15 min., 15 bends; 45 min., 20.3 bends; 30 min., 17 bends; 60 to 120 min., 22 bends. Boiling, as above, is but a form of annealing, which might possibly be carried out, under working conditions, in other ways, as, for instance, by passing an electric current through the wire so as to heat it up to the desired temperature. It is evident that no form of annealing which would injure the hempen core is practicable for a rope, and hence measures appear to be limited to a short lapse of time and to temperatures up to 100 deg. Centigrade.

New wires of good quality show remarkable uniformity under test, but similar wires, which have been acid treated and then heated to the boiling point of water, are much more irregular, as the results quoted above indicate, probably because the hydrogen is not uniformly expelled. New wires under the torsion test show a smooth fracture, whereas acid-treated wires show a ragged fracture, with separation of the wire fibres at that point. The non-homogeneity of wires is shown by the fact that longitudinal crevices develop in new wires by treatment with fairly strong (say 10 per cent.) acid. If wires are twisted before such acid treatment, spiral crevices develop, thus showing that the lack of uniformity in the original material is perpetuated in the wire drawn from it. The etched-out portions may possibly indicate the presence of steel with less carbon, acting as an anode in a galvanic couple, while the portion of the wire higher in carbon acts as the cathode.

As might be expected, the conditions most favorable to corrosion of steel by oxidation do not promote absorption of hydrogen, since evolved hydrogen tends to combine with oxygen to form water.

Lapse of time also in great measure restores toughness by allowing the absorbed hydrogen to escape, but its complete expulsion is a most difficult matter; in fact, Prof. Arnold informed me that after heating a sample of steel to redness for several hours it still continued to evolve hydrogen. Some new wires as above described, which required 31 twists to break before treat-

ment with dilute acid and 13 twists after treatment, were buried in lime to prevent rusting for three and a half days; after this lapse of time they required the following twists to break: 26, 31, 31, 34, 26.5; average, 29.7 twists.

The conditions most favorable for absorption of hydrogen by steel wire in hoisting ropes exist in a mine at which preservatives are irregularly used, and where the acid water saturating the hempen core acts on the wires near the center of the rope, and thus partially protected from the air. Conversely, the regular use of acid-free preservatives upon wire ropes from the start retards in great measure both the external and visible, as well as the internal and invisible, deterioration of the wires composing the rope.

### SAN FRANCISCO.

The San Francisco Section of the Mining and Metallurgical Society met at 1026 Crocker Building, Feb. 6, 1911, following a dinner at the Palace Hotel at 7 p. m. Members present were: S. B. Christy, E. A. Hersam, E. T. Dumble, Albert Burch, Charles Butters, F. W. Bradley, H. W. DuBois, A. C. Lawson, W. H. Aldridge and H. F. Bain.

The chairman read to the Section a communication from the Secretary of the Society regarding proposed procedure in connection with possible expulsion of members guilty of unprofessional conduct, and his reply to this communication. It was the sense of the meeting that the position taken by the chairman was sound.

There was an informal discussion of various matters pertaining to the relation of the Section to the parent Society, after which the following resolutions were adopted:

Resolved, That the San Francisco Section hold stated meetings on the first Monday of February, of May, of September, and of December, and other meetings at the call of the chairman.

Resolved, That the chairman of the Section be authorized and requested to inform the council of the Society that it is the sense of the San Francisco Section that the Constitution should be so amended as to make the Society consist of a federation of local mining and metallurgical clubs.

## MINING AND METALLURGICAL SOCIETY OF AMERICA

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Resolved, That Messrs. Christy, Lawson and Burch be constituted a committee to draft and submit amendments to the Constitution designed to bring about the proposed change.

Upon motion, the Section proceeded to the consideration of nominations for membership in the Society, and after discussion a list of names was endorsed. It was moved and seconded that the secretary be instructed to write to the gentlemen on this list, inviting them to allow their names to be proposed for membership in the Society and stating that their proposals would be endorsed by the members whose names were set opposite, and this motion was carried.

Upon motion, the secretary was instructed to cast the ballot of the Section for the re-election of the Section officers for the ensuing year. The ballot being cast, S. B. Christy was chosen for chairman, and H. F. Bain for local secretary.

Upon motion the meeting was then adjourned.

H. FOSTER BAIN, *Secretary of Section.*

### PHILADELPHIA.

At a meeting of the Philadelphia Section held Monday, February 10, the Committee on Engineering Ethics presented a preliminary report, with the suggestion that it be placed before the Society for discussion.

The Committee recommended that the discussion extend to and include (1) specific criticism of each paragraph, (2) amendments and additions, (3) suggestions as to changes in form and improvements in phraseology, (4) discussion of the expediency of the Society's approving and recommending such a statement of principles, (5) discussion as to whether the principles should be approved and recommended or should be promulgated as laws.

To enable the Committee to prepare a final report which, if submitted for adoption, shall prove acceptable to the Society, the Committee suggested that members be asked to submit their views in writing, either as contributions to the discussion at local section meetings or for direct publication in the bulletin. The Committee will also welcome assistance from engineers who are not members of the Society.



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Upon motion, the report was accepted for discussion and the recommendations of the Committee as to the scope of the discussion were approved.

### PRELIMINARY REPORT ON ENGINEERING ETHICS.

Proposed by a Committee of the Philadelphia Section.

#### *Principles of Engineering Ethics.*

Many engineering functions are of far-reaching importance, involving matters affecting the health and safety of individuals, the welfare of communities, and the security of large investments, and it is therefore essential that the public should have entire confidence in the efficiency and integrity of the engineer and in his methods of thought and work. As the engineer is thus under obligations to maintain a standard of conduct in harmony with high ideals, it is right and proper to formulate a definite expression of these obligations, and,

WHEREAS, the Mining and Metallurgical Society of America, as stated in its Constitution and Articles of Incorporation, aims to encourage high standards and to promote good fellowship among those professionally engaged in mining, metallurgy and allied pursuits, it is therefore

RESOLVED, That the Society hereby recommends to those so engaged the adoption of the following precepts and principles. In so doing the Society has endeavored to present a statement of principles, the observance of which will promote the best interests of the profession and of those whom it serves. The endorsement of this summary is not intended to be exactly equivalent to its enactment as a code, but rather as the presentation of a suggestive and advisory document which may be useful to engineers in these and allied fields of activity.

**Definition.** The word "Engineer" is herein used to include those professionally engaged in mining, metallurgy and allied pursuits, whether as engineers, chemists, geologists, metallurgists, managers or superintendents.

#### *I. Obligations of the Profession.*

1. **Maintain Dignity and Honor.**—It is the duty of the engineer to maintain the honor and dignity of the profession and of its members by all proper means.

2. **Criticism.**—Unnecessary criticism of others engaged in like work is detrimental to the interests of the profession.

3. **Membership in Societies.**—As an evidence of professional interest and of a desire to assist in placing the profession upon the highest plane, the engineer should, if possible, maintain membership in some technical or professional organization.

4. **Assistance and Consultation.**—If any work be beyond the ability of an engineer, his duty to himself, to the profession and to his clients requires him to secure assistance to perform the service properly, or, if this be impossible, to decline the commission.

5. **Co-operation.**—The engineer should give freely of his knowledge and experience to other engineers, but when engaged in active competition, or employed by business rivals, such obligation cannot always be recognized.

6. **Good Fellowship.**—The best interests of the profession require that each should extend to every other member kindly and courteous consideration. Employment by business rivals should not prevent friendly relations between engineers, for although fidelity to employers may require them to become partisans, it should not engender personal enmity.

7. **Litigation.**—As litigation between engineers is detrimental to the profession, differences which cannot be settled by personal negotiation should, if possible, be adjusted by arbitration.

8. **Retaining Fees.**—When uncertain as to payment for his services, the engineer should obtain a substantial retaining fee.

9. **Gratuitous Services.**—Performing professional service gratuitously, except for other engineers, or as an act of charity, should be discouraged as unprofessional, in that it tends to reduce the compensation of other engineers.

10. **Underbidding.**—The engineer should not bid a price for performing a service which will not be fairly remunerative, especially if other engineers are bidding for the same work, but an engineer may accept employment at an unremunerative price if the experience or other advantage gained may compensate for the inadequacy of the monetary consideration.

11. **Commissions.**—It is unprofessional to offer compensation for securing the selection of an engineer for any service, but

this should not apply to fees paid to reputable employment agencies; and it is likewise unprofessional to demand compensation for performing such service for others.

12. It is unprofessional to accept presents, fees, commissions, or compensation of any kind from those with whom the engineer transacts business for an employer or client.

## *II. Duties to the Public.*

13. **Protect Against Fraud.**—It is the duty of the engineer to discountenance the promotion of fraudulent schemes, and the exploitation of visionary processes and projects.

14. **Loyalty vs. Duty.**—When loyalty to employer or client conflicts with the engineer's sense of duty, he must be guided by his own judgment; but so long as he remains in the employ of another, or is retained in an advisory capacity, his first duty is to such employer or client. If the performance of this duty cannot be reconciled with proper observance of his obligations to the profession or to the public, his connection with such employer or client should terminate.

15. **Reports.**—In the preparation of reports likely to be used for publication, the engineer should be careful to make all important statements in precise language. If a report is to be published, the engineer should have the right to revise the proofs prior to publication; if a portion only of the report is to be published, it is important that the engineer insist upon and exercise this right.

16. **When Engineer Is Interested.**—If an engineer be asked to report upon a property in which he is interested, or to undertake any work when he has an interest at variance therewith, he should state the facts to his client before accepting the commission, and if such report is to be used publicly a statement of these facts should be embodied in the report, or his interest should be indicated in some equally effective manner.

## *III. Relations to Employers and Clients.*

17. **Devotion, Diligence, Fidelity.**—The engineer owes to his employer or client diligence and fidelity in the execution of matters entrusted to him.



18. **Confidential Relations.**—While the knowledge and experience gained by the engineer are his personal property, merging with and becoming a part of his professional capital, he should guard with scrupulous care those business and technical secrets with which he may become familiar by reason of confidential relations with employer or client.

19. The obligation to serve his employer or client loyally and not to divulge his secrets or confidences, requires the engineer to decline employment from others in matters wherein knowledge of such secrets or confidences will adversely affect the interest of said employer or client; in many cases such obligation may be held to exist after the termination of relations with said employer or client. The same obligation forbids the engineer from acquiring any interest that in the slightest degree may be adverse to those of his client.

20. **Expert Witness.**—When an engineer is called to testify as an expert witness, his duty will be completely discharged by fully and truthfully answering the questions put to him by the Court and by the attorneys in charge of the case. Although called upon to testify and paid for such testimony by one of the parties to the controversy, the engineer incurs no obligation to act as a partisan nor as an adviser to such party, unless it be distinctly understood that he is called in as an adviser as well as an expert witness.

21. **Advisory Reports.**—In preparing advisory reports, the engineer should be careful to use language not readily capable of more than one interpretation, and plainly to distinguish between demonstrated facts and those hypotheses or matters of personal opinion which may have been factors in reaching the conclusions upon which his recommendations and advice are based.

22. **Contingent Fees and Contingent Interests.**—Experience has amply shown that an agreement by an examining engineer to accept a compensation or fee, the amount of which is contingent upon the nature of the report, or upon its value or usefulness in raising capital or in effecting the sale of a property, is likely to prove detrimental to the best interests of the engineer and of the profession. While some of the objections to such agreements do not obtain when all of the parties in interest understand and agree to the arrangement, the practice must always involve some risk to the reputation and standing of the engineer. In the development of mineral properties, if the employer or client desires

to have the engineer personally interested in the outcome, such interest often may properly be made contingent upon the measure of success attained, but before making such an arrangement the engineer should be careful as to the character of those who will thus become his business associates, and should be sure of his ability to perform his part of the contract.

**23. Expert Witness Contingent Fee.**—The making of an agreement to accept for services as expert witness a fee which shall be contingent upon the result of the trial, may place the engineer in a painful and embarrassing position, entirely discredit his testimony and seriously damage his reputation as an engineer. If such agreement be necessary, it should be made openly and not secretly.

**24. Duty to Warn.**—It is the duty of the engineer to give timely warning to employer or client of any matter that may threaten danger, loss, or damage to such employer or client; and further, to endeavor to reduce to a minimum all risks of loss or of damage to property, or of danger to life, from causes within his control.

**25. To Advise Adversely.**—When called upon to examine into any proposition, if, from a preliminary investigation, it appears that further examination is not warranted, the engineer should advise his client to drop the matter.

**26. To Assume Full Responsibilities.**—An engineer should not evade the responsibility of definitely advising his client for or against any project. In reaching his conclusions he should avoid being either too optimistic or too pessimistic. An over-enthusiastic engineer may lead a client into an investment that should not have been recommended, while an over-cautious engineer may keep a client out of a good investment by his excessive conservatism. While an engineer may often be unable to convince himself with absolute certainty that a project is good under existing circumstances, this doubt does not justify him in unqualifiedly condemning it, any more than the fact that it might possibly be good, would justify a more sanguine engineer in unqualifiedly recommending it. If unable to reach a definite conclusion he should explain to his client the conditions as they exist, and let him decide whether or not he will take the risk involved.

**27. Estimates of Quantities.**—In reporting upon the quantities and values of ore or mineral, the engineer should state with

sufficient clearness the facts upon which the estimates are based, and the method adopted in making the computations.

**28. Fees, How Determined.**—The following paragraph defining the principles which should govern the engineer in determining what constitutes a proper charge for services, is taken (with slight changes in wording) from Paragraph 12 of the Canons of Ethics of the American Bar Association:

In fixing fees, engineers should avoid charges which overestimate their advice and service, as well as those which undervalue them. A client's ability to pay cannot justify a charge in excess of the value of the service, though his poverty may require a less charge, or even none at all. The reasonable requests of other engineers and of their widows and orphans without ample means, should receive special and kindly consideration. In determining the amount of the fee, it is proper to consider: (1) the time and labor required, the novelty and difficulty of the questions involved, the physical risks and discomforts, and the previous experience necessary, to render the required service; (2) whether the acceptance of employment in the particular case will preclude the engineer's employment by others in cases in which there is reasonable expectation that otherwise he would be employed, or will involve the loss of other business while employed in the particular case, or will produce complications with other clients or engineers; (3) the customary charges of engineers for similar services; (4) the amount involved and the benefits resulting to the client from the services; (5) the contingency or certainty of the compensation; (6) the character of the employment, whether casual or for an established, constant client; and (7) whether the character of the employment is such as to be beneficial or detrimental to the engineer. No one of these considerations in itself is controlling. They are mere guides in ascertaining the real value of the service.

**29. Controversies Over Fees.**—Controversies with clients over fees should as far as possible be avoided, and lawsuits resorted to only as a last recourse.

H. M. CHANCE,  
F. L. GARRISON,  
E. S. HUTCHINSON,  
R. A. F. PENROSE, JR.,  
R. H. SANDERS,  
*Committee.*



## PERSONALS.

Prof. Samuel B. Christy, of the University of California, has been made an honorary member of the Chemical, Metallurgical and Mining Society of Johannesburg, South Africa, in recognition of his published contributions to the science of cyanidation applied to the reduction of ores.

Prof. J. C. Branner, of Stanford University, with six assistants, will start on April 15, to explore a portion of the coast of Brazil, the expedition to be aided by the Brazilian government.

J. Power Hutchins has been appointed resident engineer, at St. Petersburg, for the Russian Mining Corporation.

Prof. H. S. Munroe sailed for the Mediterranean on February 4, intending to be absent from this country until late in the year. This is Professor Munroe's sabbatical year, and he proposes to spend it in taking a much needed vacation.

Frank L. Sizer, for many years a resident of Helena, Mont., is now superintendent of the mines of the Balaklala Consolidated Copper Company, at Kimberley, Cal.

## OBITUARY.

**Charles F. Shelby**, general superintendent of the smelting works of the Cerro de Pasco Mining Company, was killed in an accident, January 25, while on his way from Ancon to Lima, Peru. Mr. Shelby was on a vacation, and was returning from Ancon, a summer resort, in his automobile, which was equipped with flanged car wheels and was running on the tracks of the Central Railway of Peru. In accordance with the railway regulations, the automobile was in charge of a conductor. Mr. Shelby was accompanied by his wife and two other ladies. When the automobile jumped the track, it struck a telegraph pole, Mr. Shelby and the conductor being instantly killed. Mrs. Shelby suffered a broken collarbone.

Charles Francis Shelby was one of the most distinguished of the younger generation of metallurgical engineers engaged in the production of copper. He was born at Omaha, Neb., in 1874, and entered upon his professional career in 1896, when he became assistant assayer and chemist at the works of the Globe Smelting and Refining Company, at Denver, Col., with which company he

remained until 1900. He then went to the smelting works at Aguascalientes, in Mexico, first as chemist, later becoming assistant superintendent. In 1903 he removed to Globe, Ariz., to become superintendent of the smelting works of the Old Dominion Copper Mining and Smelting Company, a position that he held until 1906. He made an enviable record of efficiency at Globe, which, together with his remarkable intelligence and ingenuity, attracted general attention, and led to his selection as superintendent of the smelting works of the Cananea Consolidated Copper Company, of Cananea, Sonora, in 1906, when the rebuilding of that works was inaugurated. Under Mr. Shelby the reconstruction of that plant was rapidly executed, and his great work carried on under the direction of his distinguished chief, Doctor Ricketts, has contributed largely to the marvelous reduction in the cost of producing copper at Cananea, enabling that company to survive under recent competitive conditions.

Having substantially completed his work at Cananea, in the early part of 1910, Mr. Shelby resigned to enter upon the equally important, but greatly more arduous, duties of general superintendent of the works of the Cerro de Pasco Mining Company, in Peru. His services there during his brief incumbency had already become of extraordinary value to the company, and with his untimely death the officers of the company express their great satisfaction with his work, and feel themselves at a loss to obtain a metallurgical engineer of equal breadth to fill his place.

During a large part of his professional career, Mr. Shelby was a constant contributor to the technical press. Brought up in the school of Doctor Douglas, he was a great believer in the policy of professional frankness, of which Doctor Douglas is the great exponent. Of all valuable developments in his own practice, Mr. Shelby gave freely to his professional confreres. Even the absorbing character of his work in Peru, which was of a magnitude that would have prevented many men from publishing results of practice, did not reduce Mr. Shelby's thoughtfulness of the interests of his fellow engineers. In this, as well as in his own engineering work, his life was a commendable example.

Mr. Shelby was elected a member of the Mining and Metallurgical Society in 1909.

## CHANGES OF ADDRESSES.

Aldridge, W. H.	2626 Ellendale Pl., Los Angeles, Cal.
Argall, Philip	First Nat. Bank Bldg., Denver, Col.
Boutwell, J. M.	1323 de la Vina St., Santa Barbara, Cal.
Comstock, Theo. B.	Room 30, City Hall, Los Angeles, Cal.
Cowles, Alfred H.	Sewaren, N. J.
Derby, C. C.	Nevada City, Cal.
Hutchins, J. P.	341 Salisbury House, London, E. C., England
Kirchhoff, Chas.	244 Riverside Drive, New York.
Mann, Wm. S.,	
	Gen. Mgr., El Conde Min. Co., Tepehuanes, Durango, Mex.
Merrill, F. J. H.	624 Citizens' Nat. Bank Bldg., Los Angeles, Cal.
Palmer, C. E.	2 Rector St., New York.
Wethey, Arthur H.	37 Madison Ave., New York.

## MEMBERS ELECTED IN FEBRUARY.

Chase, Charles A.	921 Equitable Bldg., Denver, Col.	Consulting Mining Engineer.
Farish, John B.	603 Colorado Bldg., Denver, Col.	Consulting Mining Engineer.
Hellman, Fred	25 Broad St., New York	Consulting Mining Engineer.
Jennings, Hennen	2221 Massachusetts Ave., Washington, D. C.	Consulting Mining Engineer.
Staunton, Wm. F.	645 Farmington Ave., Hartford, Conn.	Consulting Mining Engineer.



# Mining and Metallurgical Society of America

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Vol. IV

April 1, 1911.

No. 3

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## ANNOUNCEMENTS.

**Bound Volumes.**—Members who wish to have their copies of the bulletin of the Society for 1908-10 bound into volumes may send them to the Secretary, who will have them bound in durable and uniform style. The charge for this service will be made to cover merely the cost of the binding.

**Membership.**—By a clerical error, the membership of the Society on March 1, 1911, was stated in the last bulletin as 200, instead of 198, the actual number. Members elected in March, 2; applications pending, 19.

**Canadian Mining Institute.**—As instructed by the Council, a committee of delegation of the Mining and Metallurgical Society attended the annual meeting of the Canadian Mining Institute at Quebec, March 1-3. The committee was received with great hospitality by the officers of the Canadian society and had the pleasure of attending a highly instructive meeting.

**Ballots.**—According to the Constitution and By-Laws, ballots upon any questions put before the membership of the Society must be enclosed in an official envelope, which must be signed by the voter for identification. Unsigned ballots cannot be counted. Any member has the privilege, at any time before the closing of the polls, to substitute a new ballot for the one already cast, in which case the original is returned to him unopened. Members residing outside of North America for more than one year are not entitled to vote. Upon amendments to the Constitution the polls are open for 60 days; upon amendments to the By-Laws, for 30 days; upon resolutions, 60 days. Inasmuch as the ballot now before the Society comprises action upon two resolutions and an amendment to the By-Laws, and the questions have been put upon the same sheet, the polls upon all of these matters will remain open for 60 days, i. e., until April 30. Members who have not already voted are requested to do so without delay. In order to carry a resolution a majority of the membership entitled to vote must be recorded in its favor, but it may be defeated by a majority of the votes cast. If neither of these results be reached upon first canvass of the ballot, the latter is prolonged for 60 days.

**Licensing of Engineers.**—Two bills have been pending before the Legislature of the State of New York for the licensing of civil engineers. Their definition of "Civil Engineer" is the broadest, including all kinds of engineers other than military engineers. If either of these bills be enacted into a law, it will be a misdemeanor for any unlicensed engineer to practice his profession in New York. If New York should adopt such a law, other States would be likely to do likewise; the promoters of this legislation, in fact, contemplate such extension. The professional societies have been earnestly opposing this bill, and the Mining and Metallurgical Society was asked to unite with them. By vote of the Executive Committee Mr. E. G. Spilsbury was appointed to represent this Society at a public hearing on the proposed law, held in Albany on March 1, and again on the 13th and 14th of the month. Mr. Spilsbury's report of the proceedings on these two occasions follows:

"New York, March 7th, 1911.

"I beg to report that I proceeded to Albany on March 1, in company with representatives of the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and of Messrs. Westinghouse, Church, Kerr & Co. This committee, under appointment, met the Committee on General Laws of the Assembly on the afternoon of March 1, when the public hearing was being held on the proposed bill for licensing engineers.

"In the various discussions that followed, it appeared that the bill specially under discussion had been presented by Assemblyman Hoff, and is known as the Hoff bill. This bill was introduced to offset the inconsistencies and the objections of the McGrath bill, which has the same object in view. The Hoff bill shows its evidently amateurish origin, and is full of inconsistencies. All the members of the visiting committee refused, however, to go into any discussion of the bill itself, merely entering protest against the enactment of any legislation which would put the practicing engineer in the same grade as the dentist or pharmacist.

"There were in all fourteen opposers to the bill, and only two speakers in its favor; the one being its presenter, Mr. Hoff, and the other Mr. Tillotson, Chief Engineer of Highways of the City of New York. Even the latter gentleman could say very little in favor of the bill, and it finally resulted in a declaration from him that the bill did not contemplate the registration of every practicing engineer, but that only such engineers as had registered would be held competent as experts before the courts, and that no plans, specifications or other papers could be offered for registration in New York unless they were the work of a

registered engineer. He stated also that he was willing to have the bill amended to effect clearly such an understanding.

"From what I have heard from members of the legislative committee, which went into executive session immediately after the public hearing, it was unanimously voted, at that time, that the bill should not be returned out of the committee.

"We find that probably the strongest sentiment in favor of the registration of all practicing engineers was that of John A. BenseL, State Engineer. It developed during the hearing that the McGrath bill for the licensing of engineers was being backed by a secret society, known as the Technical League. Judge Denahaar, who was evidently retained by the League to represent it at the meeting, refused to divulge the names of any of the officers of the League, or in fact give any information regarding it. The hearing on the McGrath bill is to be held on March 14. This is much more dangerous than the Hoff bill; it requires that every practicing engineer must first pass an examination before a board to be appointed under the bill; that he shall pay an initial fee of \$35 for the first year, and \$25 for each succeeding year, and that he shall furnish a \$1,000 bond. He is also to furnish a photograph of himself to be filed for identification purposes.

"New York, March 15th, 1911.

"I beg to report that I went with the committee from the other engineering societies to Albany on Monday and Tuesday of this week, to protest before the Commission on Public Education against the Assembly Bill No. 96, in relation to the licensing of civil engineers. The opposition to this bill was represented by some 20 members of the several societies and by the presidents of the Rensselaer Polytechnic, Union College, Syracuse University and Cornell University, as well as by letter from Columbia. The only persons appearing in favor of the bill were Walter G. Elliott, president of the Technical League, and a lawyer, Judge Danahaar, who was evidently retained for the purpose by the Technical League.

"An official communication will be drawn up by the committees of the different societies, detailing the matters which they have attended to, and their recommendations for future action of the societies. Meantime I enclose herewith a copy of a letter which I have written to the chairman of the committee, setting forth tersely some of the many objections which we see to the bill."

"New York, March 15th, 1911.

Hon. J. L. Patrie, Chairman, Committee on Public Education,  
Assembly Chamber, Albany, N. Y.

Dear Sir:—I understood you at the close of the committee meeting last night to ask each speaker to submit you a brief



covering his objections to Assembly Bill No. 96, in as concise a form as possible.

The reasons for our objections are as follows:

1. The bill proposes the impossible, when it tries to differentiate between the varied branches of the engineering profession. Each branch merges into the other; a mining or metallurgical engineer has to become a civil engineer when designing or carrying out the construction of buildings, railroads, or water power plants around mines and smelters.

2. The bill proposes the impracticable when it tries to limit its sphere to so-called "Public Works." Every practicing engineer is "able to," etc. (Page 3, lines 5-6) and consequently would fall within the scope of the provisions of the Act, and whether his business were private or public would have to take out a license.

3. The enactment of this bill would really result in a fraud on the people of the State instead of a protection. A license under the seal of the State given to an applicant would be accepted as a guarantee of his efficiency in all lines of civil engineering, whereas, in reality, he might possibly be warranted in practicing only one of the hundred-odd divisions of civil engineering. To insure the supposed protection, it would be necessary to limit the license to the special branch the applicant desires to practice. Then every time he changed from one branch to another he would have to take out a new license.

4. The immediate result of the passage of this bill would be the removal to adjoining States of most of the large engineering offices, so as to save the expense and annoyance of having to take out licenses for all the engineers engaged in the designing and construction of work outside the State, amounting to over 75 per cent. of the work of engineers now practicing in New York State.

5. The loss to the State either by the removal of such a number of professional employees therefrom, or what would probably be the case, the discharge of the New York citizens and the employment of citizens of another State in their place, would be very great, and very unjustifiable, especially when at the hearing yesterday it was so overwhelmingly demonstrated, that there was no call for the bill, either from the public or the profession, and that it emanated only from a secret body of a few hundred dissatisfied members of the Society of Municipal Engineers, who have been led by their organizer and president to the belief that the passage of this bill will enable them to hold up the municipal governments of the State for higher salaries.

6. We object to the bill for the reason that it lowers the standing of the profession, by putting the requirements for matriculation to the engineering colleges of the State on a lower scale than is now generally in force.

7. The passage of this bill would eliminate from the practice of their profession numbers of brilliant engineers, who are self educated, and for that reason alone become ineligible for license. As an instance I would state that the engineer who designed and calculated every piece of steel which went into the construction of the new Pennsylvania terminal station, in New York City, would be debarred from the further practice of his profession, as his public education never went beyond ordinary schooling.

There are many other objections which I could enumerate, but which would take up too much of your valuable time to read, and I therefore conclude with the hope that you will relieve the State of such an imposition as the passage of this bill.

Yours respectfully,

E. GYBBON SPILSBURY.

*Representing the American Institute of Mining Engineers and the Mining and Metallurgical Society of America.*

## MEETINGS OF SECTIONS.

### NEW YORK.

A regular meeting of the New York Section was held at the Engineers' Club, after dinner, on Thursday evening, March 16. The following members were present: Messrs. Stone, Ingalls, Leggett, Hoover, Lawrence, Rogers, Walker, Spaulding, Spilsbury, Wethey, Stoughton, Merrill, Parsons, Sharpless, Townsend, Walker and Westervelt. Messrs. H. H. Webb, L. Webb, H. L. Brown, R. M. Raymond, A. C. Beatty and Mr. Clark attended as guests. The meeting was called to order at 8.30 p. m.

**The Chairman.**—As the minutes of the last meeting were published in Bulletin No. 33, you have all had an opportunity to see them, and if there be no objection the minutes will stand adopted as printed.

No objections having been made the minutes were declared approved.

**The Chairman.**—The matter of licensing engineers has recently been attracting the attention of the engineering societies and our Executive Committee appointed Mr. Spilsbury to represent the Mining and Metallurgical Society at the hearings at Albany. No doubt the present meeting will be interested to hear from Mr. Spilsbury upon this subject.

**Mr. Spilsbury.**—I can not say very much about it, except that I went to Albany with a committee of other engineers to kill it, and I rather think the plan has been killed for this year. The idea got around that we all wanted the status of the profession to be raised, and the only way to do it was to have a Board of Examiners who will examine us all to see if we are sound and capable of practicing engineering in the State of New York. They wanted to give us a tag, or a license, with our photographs on it, so we should not pass it to anybody else who would not be a licensed engineer, and in that way we should have no more fake engineers. There was to be only one kind of engineer, that is civil engineers, and whether he be a metallurgist, or a mining or a mechanical engineer, the licensee could practice anything he pleased, after he was thus accredited as a civil engineer. This plan has been brought up by Walter G. Elliot, of New York, who is the head of a secret society known as the Technical League. I understand that it has a membership of 400 or 500. The headquarters of the League seem to be at the University Club. They gave their address as No. 1 West 54th Street, which is the University Club.

**Mr. Lawrence.**—I move that Mr. Spilsbury be thanked. This motion, having been duly seconded, was carried.

**The Chairman.**—If there is no other special business, we will proceed with the discussion of the proposed law for the prevention of mine accidents, first taking up Section 35. Boilers and Connections, Machinery, etc., Inspection. Paragraph 1.

**Mr. Spilsbury.**—I would like to propose an amendment to this paragraph, viz., that an inspection by any of the well known boiler insurance companies should be equivalent to an examination or inspection by some outside person.

**The Chairman.**—Would not this inspection be allowed by the paragraph as it stands?

**Mr. Spilsbury.**—This inspection is made for the insurance company only.

**Mr. Stone.**—It is made by an outside person, and all he would have to do is to swear to it to comply with this section.

**Mr. Lawrence.**—Are not these examinations very superficial?

**Mr. Spilsbury.**—My experience has been that boiler insurance men are generally pretty careful.



**Mr. Lawrence.**—I think this would be rather favoring the boiler insurance companies.

**Mr. Spilsbury.**—That would be a good thing. They are looking out for the dollars and cents and to prevent damage; and they are apt to be more careful than the inspector who is hired.

**The Chairman.**—A large majority of the people take out insurance just for the boiler inspection.

A vote was taken on Mr. Spilsbury's motion, which had been seconded, and the motion was carried.

The Secretary then read paragraph 2.

**Mr. Spilsbury.**—I would suggest that each boiler be provided with a safety valve, and not each battery of boilers. If one boiler were shut off there might be serious trouble. I believe the Hartford Company requires two safety valves on each boiler.

**Mr. Lawrence.**—I move that this paragraph be amended so that each boiler, instead of each battery of boilers, be provided with a safety valve.

**Mr. Ingalls.**—That was the intention of the committee. The present language of this paragraph is the result of inadvertence.

The motion, having been seconded, was carried.

The Secretary read paragraph 3.

**Mr. Leggett.**—What is meant by a dangerous plank walk? Why not an exposed plank walk?

**Mr. Spilsbury.**—I would make it an elevated or exposed plank walk.

**Mr. Leggett.**—I move that the fifth line of paragraph three of this section be amended so that the word "elevated" be substituted for "dangerous."

The motion was carried.

**Mr. Leggett.**—I move that Section 35 be approved as amended.

Motion seconded by Mr. Spaulding. Motion carried.

The Secretary read Section 36. Prohibited Employment of Women and Children in Mines.

**Mr. Merrill.**—I believe there is no way to prevent a parent from altering the age of a child to suit occasions.

**Mr. Stone.**—No, there is not, but under this provision the parent is liable to punishment.

**Mr. Hoover.**—In the English and Australian mines they allow boys to the age of eleven to work for five months of the year.

**Mr. Sharpless.**—Does this section prevent a boy from working on the dump or in other places about the surface of a mine?

**Mr. Ingalls.**—By some inadvertence the case of boys under sixteen working as ore sorters or otherwise on the surface has been omitted. The section starts out by prohibiting the employing of boys under sixteen in the mine, and subsequently it makes a provision that such boys may be employed in a clerical or office position. The case of boys as ore sorters is not covered. Undoubtedly that omission must be corrected. The section makes it clear that women may be employed in office positions, but not elsewhere.

**Mr. Lawrence.**—I think the substitution of the word "underground" would make it clear, that is, the word "underground" should be substituted for the words "within any mine." I move that this section be amended as I have just outlined.

Mr. Rogers seconded this motion. Motion carried.

**Mr. Rogers.**—I move that the words "clerical or office" be stricken out in the last paragraph.

Seconded by Mr. Spilsbury. Motion carried.

The meeting then proceeded to consideration of Section 37, Rules, which were read and acted upon seriatim.

**Mr. Rogers.**—Referring to Rule 1, it seems to me that it is a hardship on a small mine to have a special man called the mine foreman. I know of a good many mines where the superintendent is his own mine foreman.

**Mr. Ingalls.**—This is simply a matter of legal definition, which is made in a previous section. See Section 1.

Rules 1-5 were approved.

**Mr. Hoover.**—I think that Rule 6 is rather strong for metal mines.

**Mr. Parsons.**—I suggest that instead of specifying fire-fighting helmets the committee specify breathing apparatus. You don't necessarily have to use a helmet; you can use the mouth apparatus and goggles, and it is a question whether it is better to use helmets or mouth apparatus. There is one other point, and that is in regard to specifying two fire-fighting helmets. It is a question whether two men with helmets are any better than one. A helmet weighs about 40 pounds, and it is pretty hard to carry, and to have two men with helmets is just as bad as only one. You should have at least three men with helmets, except if one man be wanted to make a dash in an emergency. There have been several instances recently in this country and in other countries where one of the two men with helmets has gone under and the other man with him could do nothing for him because of the weight of the extra helmets, whereas if three were used they could have got the man out all right between them.

**Mr. Ingalls.**—It is unfortunate that Mr. Clark has gone out because he could have told us something about the recent fire in the Homestake when they sent to Anaconda for some of their fire fighting helmets and found them very useful in fighting their fire. The Anaconda helmets are very simple matters and cost only a few dollars, and there is no reason why they should not be provided at every mine. What the committee aimed to effect by this rule was simply that at every mine employing more than 50 men underground there should be available something of this character for making a dash into smoke or fire, as at the recent Homestake fire. It is better to have something of this sort at hand than nothing. The committee did not care to specify the provision of any particular apparatus.

**Mr. Parsons.**—The Anaconda helmet referred to by Mr. Ingalls is probably some mouth breathing apparatus. A helmet covers the head entirely while the breathing apparatus does not. The breathing apparatus is considered by some as far safer than the helmet. I move that the words "breathing apparatus" be added to Rule 6, so that it will read "Fire Fighting Helmets and Breathing Apparatus." This change should be made both in the heading and in the body of this rule.

Seconded by Mr. Spilsbury. Motion carried.

**Mr. Spilsbury.**—I should make Rule 7 read "whose duty," not "whose duties," and I would leave out "to load and unload the cage or skip." The shaft tender generally does not load or unload the skip.



**Mr. Lawrence.**—A skip tender is employed only in a large mine.

**Mr. Spilsbury.**—One man should be held responsible for all signals. Men should not be allowed indiscriminately to pull the bell rope and give signals. They may not thoroughly understand them.

An animated discussion of this rule ensued, especially with respect to its application to small mines, upon which it was felt by some members that great hardship would be worked. Upon motion by Mr. Lawrence, seconded by Mr. Brown, Rule 7 was referred back to the committee for further consideration. Rule 8 was approved.

**Mr. Spilsbury.**—I move that after the word "material" in Rule 9 the words "so projecting" shall be inserted.

Motion carried.

**Mr. Wethey.**—It seems to me that Rule 7 conflicts with Rule 10.

**Mr. Ingalls.**—It does. Our reconsideration will cover both of them.

**Mr. Merrill.**—Rule 11 provides for an opening large enough for the passage of a bucket. If that be done we might as well leave the shaft wholly open. I move that this rule be amended so as to read "sufficient closeable opening."

Seconded by Mr. Spilsbury. Motion carried.

Rules 12-20 were approved as read.

**Mr. Lawrence.**—Rule 21 fixes responsibility upon the superintendent. Why should he be held responsible for the carrying out of this rule? Why is that specifically noted here?

**Mr. Ingalls.**—Throughout this draft responsibility is fixed upon one person or another. In any rule or section wherein no person is mentioned, the responsibility is fixed by a blanket section elsewhere. Where there are specific references fixing responsibility exemptions from the blanket section are made. Throughout the law responsibility is fixed somewhere. In this particular case it was desired to fix it upon the superintendent.

Rules 21-30 were approved as read.

**Mr. Spilsbury.**—The specification in Rule 31 that no electrical current higher than 250 volts shall be carried by any naked wire in a mine is wrong. Most of the transmission lines are of 400 volts.

**Mr. Lawrence.**—This rule would work a hardship on all mines in the Coeur d'Alene District.

**Mr. Spilsbury.**—I move that this rule be stricken out.  
Seconded by Mr. Lawrence. Motion carried.  
Rules 32-46 were approved as read.

**Mr. Hoover.**—Rule 47 would work a hardship on narrow-vein mines.

After considerable discussion it was voted that the committee be advised to strike out Rules 47 and 48 and to revise Rule 49. Rule 50 was approved.

**Mr. Lawrence.**—I move that Rule 51 be amended so as to read, "The collar of all shafts shall be adequately protected," etc.  
Motion carried.  
Rules 52 and 53 were approved as read.

**Mr. Lawrence.**—I move that Rule 54 be amended by substituting the words "by three or more clamps or bolts," instead of "not less than twelve," etc.  
Motion carried.  
Rule 55 was approved as read.

**Mr. Leggett.**—Why is a limit of 100 pounds made? Much less than that is dangerous.

**Mr. Merrill.**—I move that the words "in excess of a daily average of 100 pounds" be stricken out, and that after the words "with a separate building," the words "or segregated in an underground chamber" be inserted.  
Motion carried.  
Rules 57-68 were approved as read.

**Mr. Wethey.**—I move that the words "except in cases of emergency" be added at the end of Rule 69.  
Motion carried.  
Rules 70 and 71 were approved as read.

**Mr. Merrill.**—I move that the word "first" be inserted before the word "engaged."  
Motion carried.  
Rule 73 was approved as read.

**Mr. Ingalls.**—I move we adjourn.  
Motion carried.  
Meeting adjourned 10.30 p. m.

A. L. WALKER,  
*Secretary of the Section.*

## PHILADELPHIA.

A meeting of the Philadelphia Section was held at the Engineers' Club, Philadelphia, on March 17, at 8 p. m. Present: Messrs. Chance, Hutchinson, Fairchild, Garrison and Sanders.

The minutes of the previous meeting, held Friday, Feb. 10, 1911, were read and approved.

The subject of the regulation and dues of local sections of the Society was discussed, and it was the consensus of opinion of the members present at this meeting that until the local sections knew what they want to do, or until there are more sections, it might be better to let the present conditions continue; that each section should still have entire liberty of action, as far as expenses, regulation of meetings, etc., are concerned, so long as none of its actions conflict with the Constitution of the Society.

On motion, the meeting adjourned at 10.30.

F. LYNWOOD GARRISON,

*Secretary of the Section.*

## COMMUNICATIONS.

The Secretary has received the following communications from members with respect to matters that are now under discussion by the Society.

### PROPOSED MEDAL.

**S. B. Christy.**—I sincerely hope that the members of the Society will reject the proposal, now before them, to award a gold medal annually to the person rendering the greatest service during the year to the mining and metallurgical professions. At any rate, I feel that such action should not be taken without a full discussion of the subject by all the members of the Society. I beg leave to present the following brief arguments against such a proceeding:

In the first place, it seems to me that the practice of awarding medals harks back to barbarous times; that it is an appeal to the "Eternal Monkey in Man"; that it seems particularly out of place when given as an award for scientific and technical services.

In the second place, it would be an extremely difficult and onerous task to award such a medal with any degree of justice, owing to the fact that there will be so many claimants who have succeeded in distinguishing themselves by doing things which are entirely different in kind. No reasonable comparison can be made, nor can any satisfactory scale be found as a basis for awarding such medals.



In the third place, such a practice, instead of increasing the usefulness of the Society, will be not only a waste of money, time and energy, but also a fruitful source of hard feeling and jealousy, and will therefore do the Society more harm than good.

In the fourth place, it seems absurd that a society so small in membership as ours is at present should attempt such an undertaking at a time when it is unable to issue a bound volume of its proceedings.

I speak on this subject after having had a great many years' experience along just these lines. For a number of years I have been on a committee of the faculty of the University of California, whose duty it is to award annually a gold medal. A number of friends of the University in its early days, most of them graduates of the old-fashioned classical course, where every student took the same course in college, established a fund which allowed a medal worth \$150 to be given each year, as the phrasing goes, "to the most distinguished graduate of the year." In the old college course, where every student ran the same race, it was not so very difficult to determine who was the most distinguished graduate of the year. But in a modern university, giving a dozen or more courses, some in ancient, some in modern letters, some in law, medicine, pharmacy, dentistry, mining, mechanical and civil engineering, chemistry, agriculture and commerce, among other subjects, it has been found, just as it would be in our Society, absolutely impossible to determine the relative merits of candidates who distinguished themselves in their various courses. After wasting, year after year, a great amount of time on the part of all members of the committee, the University faculty has appealed to the Board of Regents to be released from the duty of awarding such a medal. Application has been made to the courts for this purpose, but they have ruled that, owing to the fact that all the well-meaning gentlemen who founded the medal have since died, the courts cannot find any way to relieve us from the obligation. A number of our graduates, however, who have been awarded the medal have declined to receive it after it has been awarded to them and have returned it to the Regents to be melted down into bullion and used for some useful purpose.

The fact that the Institution of Mining and Metallurgy of London has adopted the practice of awarding medals may be cited as an argument why our Society should assume such an obligation. In the first place, the Institution of Mining and Metallurgy of London is a much older and larger society than ours, and it has already outgrown its birth-pains, which cannot be said of our Society as yet. In the next place, it remains to be proved that any good has come from the awarding of medals

by the English society; and it undoubtedly has been followed by hard feeling on the part of many to whom medals have not been awarded. In the third place, it does not follow that because the Institution of Mining and Metallurgy of London has taken such a step that the Mining and Metallurgical Society of America should do so also. The awarding of medals is a distinctly English habit, and it is distinctly foreign to American traditions to adopt such a method, which naturally suggests the awards given to immature persons in preparatory schools and academies.

If the Mining and Metallurgical Society is anxious to aid research and investigation, it might properly do so, sufficient funds being available, by voting an adequate sum to aid in some investigation or research which was of sufficient merit and importance, and I should distinctly favor such a step whenever the finances of the Society warranted it. But I sincerely hope that our Society will not make the mistake of starting the practice of awarding medals, a practice which harks back to the Middle Ages. It seems to me that we have already a sufficiently large number of troubles on hand, without creating any new ones, and I sincerely trust that this decision will be reconsidered.

## PREVENTION OF MINE ACCIDENTS.

**G. C. Stone.**—I beg to offer the following communication from Mr. Edwin I. Atlee, President and Treasurer of the Philadelphia Manufacturers Mutual Fire Insurance Company, regarding the requirements imposed by that company on the storage of explosives, oils, gasolene, etc.

"The recommendations that we make in relation to oils, gasolene, etc., in connection with plants insured by us, are governed somewhat by the yard spaces with which we have to contend. As to the storage of lubricating oils, we do not look upon them as hazardous, and it is the usual custom to store them in well constructed buildings outside and 25 to 50 feet away from main buildings.

"In the case of gasolene, fuel oils, naphtha, etc., we invariably require such materials to be buried in the ground, with proper vents, and not nearer than 50 feet to any building. Of course, if the yard space permits, we naturally require a greater distance. In no circumstances do we allow this class of oils to be stored above ground, and we will not permit installations in which such oils are conducted by gravity to the point of combustion.

"As to the storage of explosives, I can recall no case with which we have had to deal in which it was necessary to store such materials on the premises. Generally speaking, I should think that the farther away from any buildings you can store them, the better. I do not believe you would impose any hard-

ship on the insured if you required him to maintain a distance of at least 50 feet from any building, and such a rule would be in line with the requirements of insurance companies with respect to inflammable materials. If conditions permit a still greater distance, so much the better."

**W. R. Ingalls.**—The following final recommendations were adopted by the special committee of the Rhodesia Chamber of Mines, to provide against the danger arising from drilling into misfired holes.

(a) Blasting operations may only be conducted by competent persons.

(b) Misfires must be reported by the person in charge to the shift boss or mine foreman and the miner relieving him.

(c) Charges may be untamped sufficiently to permit of immediate refiring.

(d) No hole which has contained explosive may be deepened, and all misfires and sockets must be efficiently plugged with wooden plugs where possible.

(e) In the case of a misfire having occurred the hole shall be blasted, otherwise the gang-boss in charge shall remain at the working face until all the fresh holes to be drilled, shall have attained a minimum depth of two inches, and shall see that the fresh holes are given such direction as will keep the drill clear, of the misfired hole.

(f) In case of a misfire, 20 minutes must elapse before returning to the working face.

## PERSONALS.

Walter H. Aldridge, who has recently become associated with the Gunn-Thompson interests, has opened offices at 603-604 Central Building, Los Angeles, California. The properties with which Mr. Aldridge will have to do are Inspiration, Mason Valley, Magma and Gunn-Quealy Coal Company. The valedictory banquet given on February 20, at Trail, B. C., to Mr. Aldridge, who on January 1 retired from the position of managing director of the Consolidated Mining and Smelting Company, of Canada, Ltd., was a striking tribute to the general esteem in which he is held in British Columbia. Mr. Aldridge's friends presented him with an address, and the employees of the company gave him a service of silver plate, manufactured from silver mined in the Kootenay and refined at Trail.

Howard W. DuBois, of Philadelphia, recently spent several days in Victoria, B. C., before going up to the Cariboo district,



where he is putting in an extensive water supply system for gravel-washing for the Quesnelle Hydraulic Gold Mining Company.

Louis D. Huntoon has resigned the chair of mining and metallurgy at the Sheffield Scientific School of Yale University and will open an office as consulting engineer at New York.

James F. Kemp has been appointed to one of eight vacancies in the corresponding membership of the Geological Society of Stockholm, Sweden.

A. H. Wethey has returned to New York from Arizona, where he has been engaged in professional work. Mr. Wethey has become vice-president and general manager of the Consolidated Arizona Smelting Company, of Humboldt, Arizona.

Pope Yeatman is now at the Braden copper mine, Chile. He is expected home about the middle of May.

### CHANGES OF ADDRESSES.

Mann, W. S. . . . . Pilonas Mining Co., La Portilla, Dgo., Mex.  
Staunton, W. F. . . . . 609 Central Bldg., Los Angeles, Cal.  
Parker, Richard A. . . . . 929 Foster Bldg., Denver, Colo.

### MEMBERS ELECTED IN MARCH, 1911.

Perry, O. B. . . . . 165 Broadway, New York, N. Y.  
General Manager, Yukon Gold Company.  
Wiard, Edward S. . . . . 417 Boston Bldg., Denver, Colo.  
Consulting Mining Engineer.

# Mining and Metallurgical Society of America

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## ANNOUNCEMENTS.

Owing to inability to secure a meeting of the Executive Committee during the last month it has been impossible to take action in several important matters pending before the Society. A meeting of the Council has been called for May 5, at 3.30 p. m., at the office of the President.

**Prevention of Mine Accidents.**—Discussion of the report presented to the Society by a committee originally appointed by the American Mining Congress has been completed by the sections which have devoted consideration to it at their meetings. The Secretary still has one or two contributions to the discussion from members of the Society, which will be published as communications in the next number of the Bulletin. It is hoped that there will be further communications upon this important subject.

**Communications.**—Many members of the Society have no opportunity to attend the meetings of the organized sections. This is no reason, however, why they should not participate in the discussion of matters brought up at meetings of any section, or of new matters. Such may be done through communications to the Secretary for publication in the Bulletin. Members will notice that a department of "Communications" has been established for this purpose.

## MEETINGS OF SECTIONS.

### NEW YORK.

The regular monthly meeting of the New York Section was held on Thursday evening, April 13, after dinner at the Engineers' Club. Those present were Mr. Stone, chairman; Professor Walker, secretary; Messrs. Huntoon, Lawrence, Borrow, Parsons, Peele, Rogers, Spaulding, Spilsbury, Townsend, Irwin, Cowles, Mitchell, Brown, Raymond, Raht and Dufourcq.

**The Chairman.**—The minutes of the last meeting having been printed in Bulletin 34, unless there be some objection, they will be accepted as printed.

No objection having been made, the minutes were declared approved.

Mr. Spaulding explained a model of a skip and bucket which had been sent to the meeting by Mr. Wethey. This skip and bucket are the invention of Mr. Thomas Bryant, of Butte, Mont., and have been put in use in the mines of W. A. Clark in Butte. Mr. Spaulding further stated that Mr. Channing has installed this new arrangement at the plant of the Miami Copper Co.

**Mr. Lawrence.**—I think the thanks of the New York Section are due to Mr. Wethey for his interest and trouble in sending the model to this meeting, and I move that the Section pass such vote of thanks.

Motion carried.

**The Chairman.**—We shall now proceed to further discussion of the report of the Committee on the Prevention of Mine Accidents, first taking up Sec. 38, providing for two openings to the surface.

**Mr. Lawrence.**—Is the distance that is specified sufficient to secure such condition of safety as is desirable?

**Mr. Walker.**—Certainly it would not be a very great distance in a large mine.

**Mr. Stone.**—This is the minimum distance. This section reads "shall not be less than 50 feet apart."

**Mr. Spilsbury.**—In the new German law, which has lately been passed, two shafts are required in all of the potash deposits which heretofore have always been operated by one shaft only. They gave four years in which to sink the second shaft. Of course there the difficulties are very great because the deposits are 1200 feet from the surface. The four years are pretty nearly up and very few of the mines have started their new shafts. There is a great deal of trouble at the present time with all of the potash miners, and it is doubtful whether that law will be enforced. The requirement that a new 1200-foot shaft be sunk for every mine is going to render it almost impossible to operate about three-fourths of the potash deposits in Germany if it be really enforced. In Stassfurt they might have to close altogether. In one mine in which I am interested, the Einigkeit mine, we have lately connected with the old Rubezahl mine, and in this way we have managed to obviate the trouble of having to put



down another shaft, but in the Harz Mountain region, where the mines are far apart this is not going to be possible. I think in applying the law in the United States there ought to be some specification regarding the area of the underground openings worked from one shaft. In metal mines 200 or 300 feet deep, unless the area being worked is large and the distance considerable, I doubt the real necessity for the enforcement of a second shaft.

**Mr. Walker.**—It appears to me that this section does not distinctly state that two shafts are required. There might be two outlets or openings of any kind. This might be provided for by a system of parallel winzes or tunnels from the shaft.

**Mr. Peele.**—May I suggest that our guest, Mr. Paul, of West Virginia, be called upon. Perhaps his knowledge of the practice in the collieries would be of interest.

**Mr. Paul.**—As the law reads in Sec. 38 it is likely to be taken advantage of by persons who are not disposed to comply with the real intent of the law. On one occasion I had to take to task an operator who was operating his mine in violation of the law for the reason of not having two openings. The law referred to required that each shaft shall have two openings 100 feet distant. The shaft was 300 feet deep. This operator contended that his shaft did in fact have two openings, one at the top and one at the bottom. As Sec. 38 reads all that is said is that such outlets shall not be less than 50 feet apart. I would say that 50 feet apart on the surface should be specified. This section might also be taken advantage of by an operator by starting a shaft at one end for development and starting another shaft 5,000 feet away (which would come within the limit of having two openings), but it might take him several years to connect. I remember an instance where previous to the connecting of the underground workings, which were less than 100 feet deep, and in this case some 7000 feet apart, an explosion occurred in shaft No. 1, killing a number of the men, and before the second shaft could be reached, an explosion occurred there killing more men. This danger, however, applies more to coal mines than to metalliferous mines, but any suggestion in regard to legislation for metalliferous mines will surely be followed, I take it, by bituminous operators, so I think it would be well if this Society should make itself clear in regard to what constitutes a second opening, and not only state the minimum distance, but the maximum distance also, between the openings in any mine.

**Mr. Townsend.**—How does this section affect mines now in operation?

**Mr. Lawrence.**—They would have to sink another shaft.

**Mr. Townsend.**—How about the deep mines, such as those of the Mother Lode?

**Mr. Stone.**—It would be a very serious hardship to them.

**Mr. Lawrence.**—Most of them can make a connection from the second level. This section does not mean to sink another shaft all the way. There must be two distinct outlets so that in case anything happens to the main shaft the miners can get out by another opening. I move that the consensus of opinion of this meeting be that there shall be two openings to the surface, or a connection with some other mine.

**Mr. Walker.**—I think it would be well to amend Mr. Lawrence's motion so that it would read in a mine employing a certain number of men.

**Mr. Lawrence.**—What number of men would you suggest?

**Mr. Walker.**—Say, fifty men working under ground.

A vote was here taken on Mr. Lawrence's motion, which was carried.

**Mr. Spilsbury.**—I move that the consensus of opinion having been expressed as to the desirability of having two openings, Sec. 38 be referred back to the committee for better explanation and better provisions than are embodied in the present draft. It seems, as Mr. Paul has pointed out, that a good deal of dodging could be done. I do not think this section goes sufficiently into details as to what may or may not be done.

**Mr. Cowles.**—It seems to me that it should be divided into classes; even among metalliferous mines we might have different classes.

Mr. Spilsbury's motion was carried.

**The Chairman.**—We will proceed to Sec. 39, which the Secretary will please read.

**The Secretary.**—This section is entitled "Openings Through Contiguous Mines. All Communicating Outlets between Contiguous Mines Shall Be Established by Agreement between the Owners Thereof."

**Mr. Spilsbury.**—I think there is one necessary phrase that has been left out of this section, and that is in case of one operator ceasing to operate his mine that the other operator should have the right to close those openings by means of a dam or by some other means so as to prevent the influx of water from the abandoned mine into his own property.

**Mr. Stone.**—In such a case, under the draft, a continuing operator has either to pump the water or provide another opening.

**Mr. Spilsbury.**—I think that would be a hardship. It would then come under the clause of having a second opening, and having to keep that one open. I think that some clause of that kind ought to be inserted. I move that a clause be inserted in this section providing that in case one mine should cease operations, and that there would be danger thereby of flooding an adjoining mine, that the operator of the mine still working should have the right to close the opening between the two mines so as to prevent his own workings from being flooded.

Motion carried.

**Mr. Spilsbury.**—I move that Sec. 39 be approved as amended.

**The Chairman.**—Sec. 40 embodies "Provisions Affecting Mines Having But One Outlet." In view of what was said in discussing Sec. 38 would it not be well to have this provision apply to tunnels as well as shafts?

**Mr. Lawrence.**—This section works a great hardship. Operators are obliged to cover the surface of the ground with sheds in snowy countries and those sheds often get on fire. You have to guard your entrances into tunnels.

**Mr. Spilsbury.**—I move that the same precautions as for shafts be adopted for entrances of tunnels over 1000 feet long.

Motion carried.

Sec. 40 was then approved as amended. Sections 41 and 42 were approved.

**The Chairman.**—We will take up Sec. 43, on ventilation.

**Mr. Spilsbury.**—This section calls for what is practically impossible in mining. It is impossible where you are running long upraises, and before connection is made with the workings above, to give a sufficient supply of air.



**Mr. Peele.**—The details will have to be left to the inspector. Sections 43-45 were approved.

**The Chairman.**—Sec. 46 relates to safety pillars.

**Mr. Spilsbury.**—Does this section mean that if anybody is working a vein 20 or 30 ft. wide he will not be allowed to go within 30 ft. of the boundary line?

**Mr. Dufourcq.**—I think this provision is ridiculous. There are many fractional claims not over 30 ft. wide.

**Mr. Lawrence.**—The law of Canada says 4 ft.

**Mr. Dufourcq.**—If you have a section of a vein 50 ft. long which can be safely mined in the middle of your property, you can mine that right out to the edge.

**Mr. Lawrence.**—I move that Sec. 46 be referred back to the Committee calling their attention to the Canadian law on this subject, that is, as to boundaries.

Motion carried.

Sections 47 and 48 were approved.

**The Chairman.**—Sec. 49 provides that a copy of this act is to be posted at all mines.

**Mr. Dufourcq.**—I believe that it would be wise to amend this so that it would be the duty of the State to furnish a copy for posting. A small mine might be started and the operator might not have a copy to post. It should be the duty of the State to provide such a copy.

**Mr. Peele.**—I would be more specific and make it the duty of the mine inspector to furnish a copy to be posted.

**Mr. Dufourcq.**—I move that this article be so amended that it shall be the duty of the inspector of mines to furnish each mine with a copy, and it shall be the duty of the superintendent to post such copy at some available point as described.

Motion carried.

**Mr. Paul.**—Does the law apply to all mines irrespective of the number of men they employ?

**Mr. Stone.**—I think there is a limit.

**Mr. Paul.**—What called this to my attention is Sec. 48 in regard to penalties for wilful neglect or failure to perform any section, clause or provision of this act, and that the right of action shall accrue to any person injured in which at least 10 men are employed. You might have two men in the mine and eight salesmen, in which case you would be employing 10 men. You might employ one man one month and in each subsequent month an additional man so that in the course of a year you would employ 12 men.

**Mr. Stone.**—I think the definition of terms would cover the whole thing.

Sections 49-51 were approved.

Mr. Lawrence called the attention of the meeting to the death of Dr. S. F. Emmons. After discussion, Mr. Lawrence moved that it be the sense of this meeting that the Council be requested to take proper action in reference to the death of Dr. S. F. Emmons, late of the United States Geological Survey. Motion carried.

**Mr. Lawrence.**—I move that we adjourn.

Motion carried. Meeting adjourned at 10:15 p. m.

A. L. WALKER,  
*Secretary of Section.*

## COMMUNICATIONS.

### PREVENTION OF MINE ACCIDENTS.

**William Kelly.**—It is quite probable that the only change in the Michigan mine inspection law will be to have the inspectors elected by the people, on the county tickets, instead of being appointed by the county boards of supervisors, as at present. This we believe to be a step backward. The leading mining men have urged a more stringent law, and the selection of an expert man for State or local inspector, and are willing to have the expense charged to the mines, but this does not seem to appeal to the members of the Legislature who have the matter under consideration. I think there ought to be a State inspector or inspectors whose eligibility should be determined by an examination, and appointment made from an eligible list.

The defects in the law that the committee has proposed are only in minor details. I would suggest that Section 31 should read, "It shall be the duty of every superintendent or master mechanic appointed by him." In any company of any size the hoisting engineers and brakemen are selected by the master mechanic, generally after consultation with the mining captain.

In Section 32, Rule 9, the words "or master mechanic" should follow the word "superintendent." Rule 11 I consider unnecessary, especially where the compartments are divided. Rule 12 requires the hoisting engineer to know things that are out of his reach. He cannot always know when there are men on the cage. In Rule 8 I think 800 ft. per min. is too slow for the deep copper mines.

In Section 34 I hardly subscribe to all the details. Rule 6: After the word "helmets" I would put the words "approved by the United States Bureau of Mines." Rule 7: After the word "superintendent" add the words "mine foreman." After Rule 9 add the words "For this purpose a rope at least 12 ft. long shall be kept on the cage." Rule 11: The words "or mine foreman" should follow the word "superintendent." Rule 15: I would strike out the last sentence and insert in its place "No loose cross-head shall be used." Rule 17: I would add the words "Within two years after the passage of this act, an automatic recording system approved by the inspector shall be installed." Rule 19: One bell to hoist and the same to stop is confusing and does not conform to the practice in the Michigan iron district. Rule 21: The words "or mine foreman" should follow the word "superintendent." This also applies to Rule 43. Rule 46: I would add the words "and openings protected by railings" after the word "over." Rule 54: Five clamps are sufficient. Some of the provisions in regard to explosives might be improved.

Section 45: I would add the words "or mine foreman" after the word "superintendent."

Section 48: The last paragraph really covers another subject, that of accident compensation.

## OBITUARY.

**Samuel Franklin Emmons** died on March 28, 1911, after a short illness of five days, at his home in Washington, D. C. For the last year or two Mr. Emmons had been in poor health, but none the less was able to attend to his duties; as late as March 23 he was in his office in the Geological Survey.

Mr. Emmons' death has deprived science not only of an eminent geologist, but of the pioneer in economic work in this country. For the last 30 years he has indeed been the most prominent figure in that field in America, if not in the world. The loss which his death has inflicted on the wide circle of those who knew and admired him, would be difficult to estimate.

He was born March 29, 1841, in Boston, Mass., where his family has resided since 1840. His great grandfather, Samuel



Franklin, after whom he was named, was the first cousin and most intimate friend of Benjamin Franklin.

He graduated from Harvard College in 1861, and went to Europe in June of that year to pursue his professional studies, there being at that time no mining schools in the United States. On the application of the United States Minister at Paris he was admitted to the *Ecole Imperiale des Mines* in 1862, where, during two years, he followed the same courses, and passed the same examination as the French Government engineers, being rated first among foreign students in the final examinations.

In the summer of 1864 he went to Freiberg, Saxony, taking a practical course in the mines during the summer months, and following the lectures and laboratory work of the *Bergakademie* during the ensuing year. Afterward he studied various European mining districts until the summer of 1866, when he returned to America.

After eight months spent in visiting the mining regions of the United States, he went, in May, 1867, to California with Clarence King as volunteer assistant geologist on the United States Geological Exploration of the 40th parallel. This was the first Government exploration conducted under scientific, instead of military management. At that time the Pacific railroads were just started, that on the east having reached half way across the plains, and that on the west half way up the western slope of the Sierra Nevada; of the intermediate region the greater part was practically a *terra incognita*. Mr. King's plan was to make a topographical and geological survey of the region to be opened up by these railroads, covering a mountainous belt over 100 miles wide and about 1000 miles long. In spite of natural obstacles this plan was successfully carried out, though it was 10 years before the results, filling seven Government quartos with two large atlases, were finally published. Immediate attention was, however, given to direct economic results, and the volume on "Mining Industries," largely occupied by a geological description of the famous Comstock lode, was completed in 1869. To this Mr. Emmons contributed with other members of the Survey, and it was while engaged in preparing the underground maps for this work at Virginia City, in the winter of 1867-8, that he received his official appointment on the survey. In March, 1868, Mr. Emmons had charge of an expedition to Mono Lake for the purpose of studying the thermal and recent volcanic phenomena in its vicinity. During the following summer he headed a party making a survey of central and eastern Nevada and western Utah; in 1869 he made a study of the desert ranges of the Salt Lake Valley, and of the great Wasatch range.

In 1870 a study was commenced of the extinct volcanoes of the Pacific Coast. In October, of this year, Mr. Emmons, with A. D. Wilson, topographer, spent three weeks on the slopes of Mount Rainier, the highest and most inaccessible of these peaks, which, up to that year, had never been ascended, and made a survey of the eastern half of the mountain, including its summit, but he was driven away by snow before the entire circuit had been completed.

In 1871 and 1872 he surveyed the Uintah Mountains, the Green River basin and the Park range of the Rocky Mountains. It was during the summer of the latter year that a supposed occurrence of diamonds which had created much excitement in California was shown by Emmons and King to be fraudulent.

In the autumn of 1877 Mr. Emmons, having completed his Government work, went to Cheyenne, Wyo., and engaged in the cattle business; he was still in that State when, in 1879, he was appointed geologist of the newly organized United States Geological Survey, of which Clarence King was first director. In pursuance of the policy adopted by King of making economic geology the most prominent feature of the survey, Emmons was given charge of the mining geology of the Rocky Mountain division. As a commencement of this work, Mr. Emmons was directed to make a survey of the newly opened Leadville region. The geological field work was begun in December, 1879.

The study of the Leadville district proved unusually complicated and difficult, and the field work lasted until the spring of 1881. During this time Emmons also had charge of the collection of the statistics of the precious metals in the Rocky Mountain region for the tenth census, and in connection with G. F. Becker, published Vol. XIII (Precious Metals) of its reports, in which for the first time geological sketches were published of the Western States with special reference to mining geology. An abstract of results of the Leadville work was published early in 1882 in the annual report of the Director of the Survey, but for various reasons the final publication of the monograph and atlas on the "Geology and Mining Industry of Leadville" was not accomplished until 1888.

It was by his work at Leadville that Mr. Emmons achieved his greatest distinction. His study of the geology of that district was masterly, and has proved of the greatest practical use, as well as a valuable contribution to the scientific knowledge of ore deposits. It has been largely through this report, and the studies that local engineers were able to base upon it, that the ore deposits of Leadville have been so thoroughly prospected. His conclusions have been proved by subsequent developments to have been, in the main, remarkably correct. No geologist

could wish a better or more honest testimonial than the estimation in which his work has ever been held by all classes of mining men in the district, from the leading mine manager to the humblest prospector. With all, "Emmons' report" has been a constantly sought book of reference whose worth has been proved by results.

After several years it was found that the extensive developments at Leadville necessitated further geological work and a part of Emmons' later life was devoted to a continuation and elaboration of this monographic study. The result of some of these examinations was published in 1907 as Bulletin No. 320: "Downtown District of Leadville, Colorado," in conjunction with Prof. J. D. Irving. Emmons did not live to see the final results of his labors, but the complete report on Leadville will shortly be issued by the Geological Survey.

On July 1, 1900, Emmons was put in charge of the Section of Metalliferous Deposits, under C. D. Walcott, who then was director of the Survey. For several years previous to that time he had, however, supervised a large part of that work. During the time he was occupied in economic studies with corps of geologists, much of the most valuable work on mining districts in the West was planned by him and issued under his direct supervision.

In 1894 was published a description of the Elk Mountains (in the Anthracite-Crested Butte folio). In 1895 a report on the Mines of Custer County, Colorado, was issued. In 1897 he published a folio of the Geologic Atlas of the United States on the Butte District, Montana, and in the following year a folio on the Ten-mile District, Colorado.

Among the reports in which he had a large personal share may be mentioned those describing the mining geology of the Black Hills, Mercur, Bingham, Tintic and Butte districts.

In addition to his official reports a number of shorter articles of great merit were contributed by Emmons to scientific periodicals. Among the more important may be mentioned "The Genesis of Certain Ore-Deposits," "Notes on the Geology of Butte, Montana," "Structural Relations of Ore-Deposits" and "Geological Distribution of the Useful Metals in the United States"—all in the Transactions of the American Institute of Mining Engineers. In the last mentioned paper, written in 1894, Emmons predicted the rapid increase of gold production of this country. Among those published in the Proceedings of the Colorado Scientific Society are: "Notes on Some Colorado Deposits," "On the Origin of Fissure Veins," "Preliminary Notes on the Geology of Aspen, Colorado." During the last years of his life several articles were published by him in the recently founded



journal *Economic Geology*, in which he was actively interested up to his death. Among these papers may be mentioned descriptions of the Nacozari and Cananea copper deposits of Mexico.

In 1900 a paper by Emmons of special importance appeared in the *Transactions of the American Institute of Mining Engineers*, entitled "The Secondary Enrichment of Ore Deposits," in which the laws of sulphide enrichment by descending waters were clearly stated; the recognition of these has been of the greatest practical value to miners in all parts of the world. All of these papers show consistently the same thoroughness and insight that characterized all of his work; and the same clarity of thought and vividness of expression that made him pre-eminent among writers on the subject of economic geology, and especially endeared him to the mining engineers of the world.

In 1874 Emmons was elected Fellow of the Geological Society of London. In 1877 he became a member of the American Institute of Mining Engineers, of which he was twice a vice-president. He was one of those who organized the Colorado Scientific Society. Somewhat later he took part in the organization of the Geological Society of America, and was elected president of that body in 1903. In 1892 he was elected a member of the National Academy of Sciences, of which he has been the treasurer since 1902. He was a member of the Mining and Metallurgical Society of America and of many other scientific societies. In 1910 the universities of Harvard and Columbia conferred upon him the honorary degree of Doctor of Science.

Emmons was a man of strong personal characteristics. Somewhat brusque in manner and blunt of speech, with a touch of shyness, he was not always understood at first contact. But under these traits lay a most kindly heart, and all who were brought into close association with him found a genial and sympathetic spirit. This was the experience of many of the younger men who consulted him. He was always ready to give advice or suggestion, when asked, and many a geologist holds in grateful remembrance the improvements effected in his early scientific papers under the kindly criticism received from Emmons.

With regard to his own work Emmons was very modest. While appreciating highly the interest and sincere commendation of qualified critics, he never sought the public honors that are so dear to some men. Such recognition came to him late in his career, and was, no doubt, the more highly prized because unsought.

That Emmons did not leave his Survey work for that of the professional engineer is the strongest possible evidence of his devotion to high ideals. One of the first to demonstrate the

money value of thorough geological knowledge of ore deposits, he might have received high returns for special services. But he chose to remain in the ranks of those searching for the truth for the pure love of it—the true man of science.

His name will ever be linked with that of Clarence King as the two men who created and directed the United States Geological Survey into channels of practical usefulness, and won for it the prestige and leadership in the science of economic geology that the world has recognized. His work at Leadville has been an inspiration and model for all subsequent work of that character. Emmons enjoyed the fortune, that comes to few scientists, of winning the appreciation not only of his confrères, but also of the engineers and operators whom he sought to serve.

**Heber Samuel Thompson**, born Aug. 14, 1840, at Pottsville, Pa., died at Pottsville, March 9, 1911. Major Thompson came of Irish stock, his ancestors emigrating to America in 1730 from County Antrim, Ireland, settling at Cross Roads, Chester County, Pennsylvania, moving thence to Hanover Township, same county, now part of Lebanon County, and from there taking up a farm near Derry Church, about 10 miles from Harrisburg. James Thompson, his great grandfather, settled near South Mountain, Franklin County, where some of his descendants still reside. His grandfather, William Thompson, was born in Cumberland County in 1754, and served in the War of the Revolution, participating in the battles of Brandywine and Germantown. His son, Samuel, the father of Major Thompson, settled in Pottsville, becoming a successful hardware merchant and one of the foremost citizens of that place.

Major Thompson was the youngest of four children. Born in Pottsville, he spent his entire life in that town. Entering Yale University, he pursued a classical course. The outbreak of the Rebellion came in his graduating year, and his patriotic ardor prompting him to leave college to enter the service as a private soldier, he enlisted in the Washington Artillerists of Pottsville, being mustered into the service on April 18, 1861, and arriving at Washington the same evening, among the first troops to reach the National Capital under President Lincoln's call for 75,000 men.

During this three months he was granted a furlough to return to Yale to participate in the graduating exercises of his class, and received his diploma as Bachelor of Arts, at the same time being complimented by the authorities on his action in entering the army. Ten years later he received from his alma mater, the honorary degree of Master of Arts.

Being mustered out of the three months' service on July 29, 1861, Major Thompson re-entered the service Oct. 22 following, as first lieutenant of Company F, Seventh Pennsylvania Cavalry. He was promoted and commissioned July 1, 1863 as Captain of Company I, same command.

Major Thompson had an especially honorable career in the war. He participated in all of the campaigns of his regiment, receiving special mention in orders for distinguished service at the battles of Sparta and Shelbyville, Tenn., Chickamauga and Lovejoy Station, Ga. His regiment is classed by Col. William F. Fox in his "Regimental Losses of the Civil War" as one of the 300 "Fighting Regiments." On March 18, 1864, Captain Thompson was placed on detached service, acting as inspector general of the First Brigade, Second Cavalry Division, Army of the Cumberland. He was taken prisoner at Lovejoy Station, Ga., April 20, 1864; released on parole at Charleston, S. C., Dec. 20, 1864, and finally discharged under the General Orders of the War Department, issued Jan. 24, 1865. While still on parole, he was promoted to major, but as he could not take up active service because of his parole, he did not accept the commission.

Major Thompson was a man of very attractive personality, made friends readily and had the happy faculty of retaining them. He was very popular in the town of Pottsville, and was looked upon as one of its leading citizens, ever ready to help in furthering its prosperity, always willing to lend a helping hand to those less fortunate than himself. He was a director of the Eastern Pennsylvania Railways Company; a director and ex-president of the Miners' National Bank of Pottsville; a director of the Pottsville Hospital, and, until Jan. 1, when he resigned, a director and president of the State Hospital for Injured Persons of the Anthracite Coal Region of Pennsylvania at Fountain Springs.

Major Thompson commenced his engineering career in the employment of Mr. Stephen Harris, at the Forest City Colliery, near Minersville, Schuylkill County, and remained with Mr. Harris until his appointment as engineer for the Girard estate. For the last 37 years he had charge of the large interests of the Girard estate in Schuylkill and Columbia counties, and was one of the most prominent mining engineers in the anthracite coal region, having been from 1878-1902 one of the Board of Examiners for Mine Inspectors, and also a member of the Coal Waste Commission, appointed under the Act of May 7, 1889. Major Thompson succeeded P. W. Sheaffer on this Commission on Oct. 21, 1891, and served until the report was made on May 20, 1893. He was also at one time a member of the State Board of Lunacy and State Board of Charities, and for nine years a



## MINING AND METALLURGICAL SOCIETY OF AMERICA

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member of the Pottsville School Board. He was a member of the Presbyterian Church and an elder therein for 41 years.

Of the learned and technical institutions, he was a member of the American Philosophical Society of Philadelphia, the Historical Societies of Pennsylvania and Schuylkill County, and the American Institute of Mining Engineers. He was a charter member of the Mining and Metallurgical Society of America.

He always took an active interest in the cause of the veterans of the war. He was a comrade of Gowen Post No. 23, G. A. R., Pottsville Encampment Union Veteran Legion, and a worthy companion of the Commandery of the Loyal Legion. For several years Major Thompson was the president of the First Defenders' Association, and recently compiled and published a full history of the first five companies to answer the first call for troops in the War of the Rebellion.

He was married Jan. 23, 1866, to Miss Sarah E. Beck, daughter of Isaac and Margaretta Beck, of Pottsville. They had six children, of whom four are living—Emily, widow of the late J. Park Hood, of Philadelphia; Samuel Clifton, a graduate of Yale University, and of the School of Mines, Columbia University, now a leading mining engineer of Johannesburg, South Africa; Margaretta, wife of Col. James Archibald, Jr., and Heber Harris, of Pottsville, the other two children having died in infancy.

A faithful and loyal soldier, a good citizen and a kind husband and father, Major Thompson has left the impress of his noble character on the community in which he lived, as well as on those fortunate enough to know him.

Major Thompson's wide experience in coal mining operations, and that judicial temper which nature gave him, placed him in the foremost rank of colliery engineers. His conspicuous attainments represented more than those qualities that are derived from a four years' course of school training. Well grounded in cultural studies, which tended to broaden his mind, and gifted with ready speech and a facile pen, a quality which his calling in the engineering field frequently exacted from him, he was well equipped for the duties that he had to perform. He was, moreover, able to convince his fellow men of the soundness of his views and the correctness of his judgment, which was frequently sought by men at the head of affairs in the coal region. During the years of his active life he did not cease from the continuance of those studies affecting either the technical or the moral status of his chosen profession.

His usefulness as an engineer in the anthracite region, and as a member of society were closely related, and his accomplishments in both these spheres were the sources which gave him

a broad influence and command of public respect. The ideals as exemplified by his life in the anthracite region, in a marked degree, tend to place the profession of engineering upon a higher plane.

## CHANGES OF ADDRESSES.

Fairchild, S. E., Jr... 530-31 Land Title Building, Philadelphia, Pa.  
Morley, F. H..... 734 Symes Building, Denver, Colo.  
Munro, Chas. H... 1043 Monadnock Building, San Francisco, Cal.  
Westervelt, W. Y..... 17 Madison Square East, New York City  
White, R. T..... Rancagua, Chile  
General Manager, Braden Copper Company.

## MEMBERS ELECTED IN APRIL, 1911.

Arnold, Ralph..... 70 Orange Grove Boulevard, Pasadena, Cal.  
Consulting Geologist and Mining Engineer.  
Browne, Ross E..... 234 Perry Street, Oakland, Cal.  
Mining Engineer.  
Holmes, Joseph A..... Washington, D. C.  
Director, United States Bureau of Mines.  
Patch, Maurice B..... Buffalo, N. Y.  
Superintendent, Buffalo Smelting Works.  
Williams, Gardner Fred..... 2201 R Street, Washington, D. C.  
Consulting Mining Engineer.

## PERSONALS.

John B. Farish was chosen general manager of the Cienequita Copper Company, of Sonora, at the recent annual meeting of the company.

J. P. Hutchins has been at the Syssert estate, near Ekaterinburg, Ural, Russia, examining copper and iron mines.

Prof. R. H. Richards has gone to Montana and will make a somewhat extended visit in the West.

Walter Harvey Weed has been examining the property of the Transvaal Copper Company, at Cumpas, Sonora, Mexico, having previously completed an examination of the Pedrazzini mine at Arizpe, Sonora.

# Mining and Metallurgical Society of America

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Vol. IV

June 1, 1911.

No. 5

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## ANNOUNCEMENTS.

**Meetings.**—A meeting of the Council is called for Thursday, June 15, 5.30 p. m., at the Engineers' Club, New York. A special business meeting of the Society is called for Thursday, June 15, at 8.15 p. m. at the Engineers' Club in New York. This meeting is called for the purpose of considering proposed amendments to the constitution and by-laws of the Society. For reasons of weight this meeting is called without the usual notice of thirty days.

J. PARKE CHANNING,  
*President.*

The special business meeting of June 15 will be of formal character, to permit of the introduction of amendments to constitution and by-laws, as provided in Article VIII of the Constitution. Any amendments adopted at this meeting must be further considered at a second meeting, whereof 30 days notice must be given, and if passed at the second meeting must be referred by letter ballot to the entire membership of the Society.

The action at the forthcoming meetings will therefore be in effect the action of the Society as a committee of the whole and will not be final.

*Members who do not expect to attend the meeting* called for June 15 are requested to execute the proxy enclosed with this Bulletin, making it out in the name of some member who will attend.

**Committee on Professional Training.**—The appointment of a committee on this subject having been authorized by the Council, the President of the Society has named the following members: Prof. S. B. Christy (chairman), F. W. Bradley and Prof. A. L. Walker.

**Ballot of March 1, 1911.**—Under date of March 1 members of the Society were requested to vote upon the following questions:

1.—To amend By-Law No. 5, relating to annual dues, by adding the words: "The Executive Committee of the Council may drop from membership any members more than one year in



arrears for annual dues after he shall have received notice of his delinquency."

2.—Resolved, that the Mining and Metallurgical Society of America award annually, under rules to be subsequently formulated by the Council and approved by a majority vote of the Society, a gold medal valued at \$100 to the person who, in the opinion of the Society, has done most during the previous year to advance the arts of mining and metallurgical engineering, said medal to be awarded without regard to membership in the Society.

3.—Resolved, that in the opinion of the Mining and Metallurgical Society of America, State inspectors of mines should be appointed and should not be elected.

The poll closed on May 1, 1911. The President appointed E. G. Spilsbury and A. R. Townsend as tellers to canvass the ballots. These tellers reported as follows:

Ballots were received to the number of 90, of which five were discarded, two because of ineligibility, coming from members resident outside of North America; two, because of being unsigned; and one because the member casting the ballot had died before the time of counting the ballot.

Upon question No. 1 there were 84 votes, of which 82 were in the affirmative and 2 in the negative.

Upon question No. 2, there were 84 votes, of which 58 were in the affirmative and 26 in the negative.

Upon question No. 3, there were 82 votes, of which 81 were in the affirmative and 1 in the negative.

E. G. SPILSBURY,  
A. R. TOWNSEND.

*Tellers.*

Under the constitution and by-laws question No. 1, upon an amendment to the by-laws as stated above, is carried.

Questions Nos. 2 and 3 are neither passed nor defeated. For their passage 96 votes were necessary, while for their defeat a majority of the votes cast was necessary, neither of which result was recorded. Consequently, under the provisions of the constitution a further ballot upon these questions must be submitted for the period of 60 days to the members who have not already voted. Those from whom votes are not received inside of 60 days will be recorded as voting in the affirmative. The supplementary ballot was sent out under date of May 15, 1911, and will be canvassed on July 15, 1911.

W. R. INGALLS,  
*Secretary.*

## COUNCIL.

At a meeting of the Council at the office of the President, 42 Broadway, New York, Friday, May 5, the following members were present: Mr. Channing, Dr. Chance, Mr. Garrison, Mr. Ingalls, Mr. Lawrence (by proxy), and Dr. Richards (by proxy). These constituted a quorum.

The minutes of the meeting of Feb. 16, 1911, having been sent to all members of the Council and no objection having been raised, further reading was waived, and they were declared accepted as submitted.

**Report of Secretary.**—The Secretary reported the establishment in the monthly bulletin of a department of communications, the purpose of which is to afford means for members not affiliated with sections to participate in the discussion of matters before the Society. The Secretary further reported that discussion of the report of the Committee on Uniform Legislation for the Prevention of Mine Accidents had been completed by the Philadelphia and New York sections, the latter having devoted the major part of its sessions of 1910-11 to this subject. This report has also been discussed by a number of members in contributions printed under Communications in the monthly bulletin.

**Report of Treasurer.**—The Treasurer reported informally that the expenses for printing, salaries, stenography and type-writing, stationery and supplies, postage and telegraphing during the first quarter of 1911 had amounted to \$506.15. The cash in bank, and petty cash on hand, April 1, 1911, amounted to \$2,271.70. Up to that date \$1,390 had been received on account of dues for 1911. If running expenses during the remainder of the year be at the same rate as in the first quarter, a surplus of upward of \$1,600 at the end of the year may be expected.

**Professional Training.**—The Secretary called attention to the discussion at previous meetings of the New York Section upon the subject of the education of mining engineers in schools and colleges of the United States, and the subsequent development of their graduates into useful assistants on the staffs of mining operators. The discussion of this subject brought out some good ideas, but no conclusions were reached. The matter is important, and furthermore is one that can usefully be taken up by the Mining and Metallurgical Society. The Secretary recommended that the Council of the Society establish a committee of three members, to be appointed by the President, to consider the general subject of professional training, both before

and after graduation, and report to the Society. A motion to that effect was made by Dr. Chance, seconded by Mr. Garrison, and was carried.

**Society Emblem.**—Attention was called to a long-standing resolution, passed by the New York Section, requesting the Council to consider the adoption of an emblem and badge for the Society. The Secretary submitted several designs that had been obtained. None of these was regarded as satisfactory, and it was voted that Dr. Chance and Mr. Ingalls be constituted a committee to give further consideration to this matter.

**Binding Bulletins.**—The Secretary reported that he had received bids for binding the annual volume of bulletins of the Society in half morocco, at the rate of \$1 apiece for 200 copies, and \$1.25 for 10-15 copies. The Secretary further reported that he had been able to collect back numbers of the Bulletin so as to make a small number of complete sets. The situation in this matter has been fully explained in recent numbers of the Bulletin. The Secretary reported that he had received requests for complete sets from three members, and requests for single copies from two other members. It was voted to supply back numbers of the Bulletin to those members who had requested them previous to the date of this meeting.

**The Supreme Court.**—The Secretary in behalf of Mr. H. V. Winchell, presented the following communication under date of April 18, 1911:

"Much familiarity with mining litigation has convinced me of the great importance of having upon the Supreme Court at least one justice who is by his early training and place of residence in sympathy with and experienced in mining. Few matters of greater financial importance come before the courts; and yet, while there may be jurists who are looked upon as authorities in corporation law, in railroad law, in international relations and in many other lines, there is not one pre-eminently qualified to interpret the mining law and to establish new principles and decisions in some of the important cases constantly arising and even now pending.

"It seems to me probable that the mining interests are themselves responsible for this condition of affairs. If we urged upon the President our claims to such an appointment he would hardly be able to refuse consideration of our request whenever a vacancy occurs which could be filled from the West.

"In order to bring this matter up for discussion, I beg to propose for the consideration of the Mining and Metallurgical Society the advisability of laying before the President a memorial



asking for the appointment of a mining judge whenever there is opportunity.

"If this suggestion meets with the approval of the Council I shall be glad to have it brought before the Society in proper form."

The meeting was unanimously of the opinion that Mr. Winchell's suggestion was pertinent and important and that the subject is one that can usefully be taken up by the Society. It was voted that Mr. Winchell's suggestion be laid before the Society for discussion, pending further action.

**Constitution and By-Laws.**—The Executive Committee submitted the following report:

To the Council of M. M. S. A.:

At a meeting of the Council, Feb. 16, 1911, attention was called to defects in the constitution and by-laws of the Society that had become apparent in the practical working of its affairs, among these being the necessity of simplifying procedure of the Society in acting upon questions of general interest; also, the need for a provision that officers shall hold over until successors qualify; and some provision for presiding officer at meetings in absence of President and both Vice-Presidents. Attention was also called to the suggestion that officers of the Society should be elected by general ballot. Upon motion, duly seconded, the Executive Committee was instructed to give consideration to these matters, and others that it might deem advisable to consider, and draft such amendments as shall be desirable and submit report to the Council at the earliest possible date. Acting upon these instructions, your Executive Committee has given consideration to the matters, and begs leave to report as follows:

In our opinion the constitution requires no alteration, but may advisably be amended in one particular, namely, as to election of officers. The by-laws need no essential amendment except with respect to procedure in acting upon resolutions.

Under the present constitution the officers of the Society are elected by the Council from itself. The idea in the drafting of the constitution was that the members of the Society would exercise great care in the election of councillors, having in view the possibility that any one of them might be elected President of the Society. It has been the experience that Council meetings have been attended by barely a quorum, and while nothing but approval has been voiced with respect to its action in electing officers up to the present time, it must be admitted that election in this manner may not be thoroughly representative. We are of the opinion that the officers may preferably be elected by vote of the whole Society. It is, however, desirable to preserve

the present excellent system of electing the Council. We have proposed an amendment to the constitution, together with the necessary accompanying amendments to the by-laws, which we think will secure both of those things.

We propose that the officers of the Society shall consist of President, Vice-President and Secretary-Treasurer, who shall be elected by vote of the whole Society. The Council shall continue to consist of 15 members, of whom three shall be the above officers, ex-officio, and 12 shall be elected by districts as at present. If a second or third Vice-President be required, they may be elected by the Council, from among itself, as at present, and such election may be made at any time when necessary to insure the presence of a presiding officer. In order to preclude the possibility of an interruption in the business management of the Society, it is necessary to provide that the Secretary-Treasurer shall hold office until his successor accepts transfer of the duties of that office. The affairs of the Society are better conducted by one man acting as both Secretary and Treasurer than by two persons holding those offices separately. These ideas are carried out in the proposed amendment to Article 5 of the constitution. The proposed amendments to by-laws 8, 9, 10, 11 and 12 are to specify procedure under the proposed amendment to the constitution.

We have proposed an amendment to by-law No. 1 in order to correct an evident omission, the present phraseology of a sentence in this by-law failing to make sense. The proposed amendment simply conforms to what has been the procedure of the Society since the method electing members was changed.

The procedure of the Society in acting upon resolutions, or other matters of general interest, undoubtedly needs to be greatly simplified. Under our present system, it is scarcely possible to secure action upon any resolution inside of six months, which delay may often defeat the purpose. The experience of the Society in such matters has up to the present time been limited, and it is difficult to foresee just what may be desirable to work out. Consequently we think it best at the present time to recommend that resolutions, or similar matters, shall be acted upon under rules to be formulated by the Council, with the proviso in the by-laws that at least 30 days must be allowed for any ballot of the membership of the Society. This proviso will prevent snap action. In all other respects the rules may be altered from time to time in such ways as experience may show to be desirable, and by leaving this to the Council prompt action can be taken at any time.

Professor S. B. Christy, member of the Council and Chairman of the San Francisco Section, has made the following suggestions:

Amend Sec. 14 of the by-laws by striking out the sentence beginning with the word "Resolutions" and substituting the following: "Resolutions on behalf of the Society as a whole endorsing or condemning matters of public or professional interest shall be submitted to a vote of all the members of the Society in such a manner as may be determined and ordered by the Council." Amend Sec. 15 of the by-laws by adding the following clause: "Provided that each Section shall have the right to fix the time and place of its meetings, and the subjects for its discussion, and that whenever due notice shall have been sent to all members of a Section that certain questions of public or professional interest are to be discussed and acted upon at a certain meeting, that Section shall then have the right to make public its conclusions on such questions; provided that said conclusions shall have been first approved by a two-thirds vote of the members present, and also by all members of the Council belonging to said Section and, provided further, that said conclusions shall be published as those of the Section only."

Professor Christy's first suggestion has in effect been adopted in our recommendations. The proposal that each Section shall have the right to fix the time and place of its meetings and the subjects for its discussion conforms to what has developed naturally in the progress of the Society and there is no reason why such provisions should not be enrolled in the rules and regulations. We are unable to recommend, however, that any Section shall have the right to make public its conclusions upon any matter under any circumstances.

At the present time the Society has three organized Sections, which in the aggregate embody decidedly less than a majority of the members of the Society. The organization of each of these Sections is vague. Before according to any local Section any special privileges it would be necessary to define and determine precisely what constitutes the membership of a Section.

Even then it would not be wise to grant to local Sections what in effect would enable them to act as local, independent societies. The Mining and Metallurgical Society has been organized as a national society, aiming to concern itself with broad professional questions. It has no concern with local questions. Matters that might be taken as purely local by a local Section might easily prove to be of broad bearing and it might easily happen that two or more local Sections might publicly express divergent views. It would be chimerical to expect the general public to be able to discriminate between action by the Mining



and Metallurgical Society as a whole and action by local Sections thereof. Moreover, in the nature of things a majority of the membership of the Society can never be affiliated with any local section, and it would be unfair to commit the name of the Mining and Metallurgical Society to conclusions of any kind in which the whole membership is unable to participate. The original purpose in organizing local Sections was simply to facilitate meeting and discussion on the part of those members so situated geographically as to be able to come together frequently. It was not contemplated that they should be organized as independent units, and in considering the welfare of the Society as a whole we cannot recommend any innovations that would tend to such a result.

The articles of the constitution and by laws that we propose to amend, together with the proposed amendments, are attached to this report. We also append a proposed set of rules governing resolutions, and a proposed set of rules governing local Sections.

J. PARKE CHANNING,  
H. M. CHANCE,  
W. R. INGALLS.

Upon motion, duly seconded, it was voted that the above report be referred to the whole Council for letter ballot, and this motion having been carried the President ordered such a letter ballot.

**S. F. Emmons.**—The Secretary presented a resolution, passed at the meeting of the New York Section on April 13, 1911, to the effect that it was the sense of that meeting that the Council be requested to take proper action in reference to the death of Dr. S. F. Emmons, late of the U. S. Geological Survey. Mr. Lawrence (by proxy) made the following remarks: "With reference to a resolution regarding the death of Dr. Emmons, which I suggested that we send to Mrs. Emmons and place on the minutes of the Society, I desired simply to bring this matter to the attention of the Council. The action suggested would be the establishment of a precedent, which might be unwise. It is probable that if we send to Mrs. Emmons a copy of the bulletin of the Society, containing the article on Dr. Emmons' life, that will be sufficient action in the matter."

After considerable discussion, it was the opinion of the meeting that in view of the especial position in the world of science and technology attained by Dr. Emmons there would be no establishment of a troublesome precedent in expressing the appreciation of the Mining and Metallurgical Society for his

work, but it was voted that this matter be referred to the Executive Committee, with full power to act for the Society.

There being no further business, the meeting was then adjourned.

W. R. INGALLS,  
*Secretary.*

## MEETINGS OF SECTIONS.

### NEW YORK.

The regular monthly meeting of the New York Section was held on Thursday evening, May 18, after dinner at the Engineers' Club. Those present were: Mr. Stone, Chairman; Professor Walker, Secretary; Messrs. Spilsbury, Ingalls, Peele, Townsend, Channing, Aldridge, Finlay, Clements, Rogers, P. G. Spilsbury and Corning.

**The Chairman.**—The minutes of the last meeting having been printed in Bulletin 35, of which you have all received a copy, unless there is some objection they will be accepted as printed.

No objection having been made, the minutes were declared approved.

#### *Detection of Willemite by Ultra-Violet Light.*

**The Chairman.**—The New York Section has been discussing through a number of meetings the report of the Committee on the Prevention of Mine Accidents, which discussion was concluded at our April meeting. For the sake of variety, the executive committee of the section, thought it would be well at this meeting to introduce some descriptions and discussions of purely technical practice. I have brought with me an apparatus that we use in the mill of the New Jersey Zinc Company at Franklin Furnace, New Jersey, for the production of a violet light. It has been found that ultra-violet rays cause the mineral willemite to become luminous in a very peculiar manner. Thus after exposure to such rays the mineral glows for some time, and inasmuch as no other mineral, so far as known, behaves in the same way the presence of willemite can readily be detected. It is used in the mill at Franklin Furnace for examination of the tailings before they are discharged. Tailings can be examined in this way in broad daylight. The apparatus is very simple, consisting merely of an arrangement to produce an arc between iron electrodes. An arc produced in that way is rich in ultra-violet rays.

Mr. Stone then proceeded to show the effect upon willemite, using various samples of ore and mill products.

**Mr. E. G. Spilsbury.**—Just how is this apparatus used in the mill?

**Mr. Stone.**—Every barrow full of tailings is examined by the mill foreman. If he judges that there be more than 2% zinc present, the tailings are returned for further treatment. The foreman is able to make a very close estimate. Of course he is checked by assay and chemical analysis. Our tailings assay usually less than 2% in zinc.

**Mr. Finlay.**—What is the composition of the Franklin ore-body?

**Mr. Stone.**—It runs about 22% zinc. The ore consists of about 50% franklinite, 20% willemite, and 15 to 16% limestone. There are about 115 other minerals. The process of milling is one of separation rather than concentration.

**Mr. Finlay.**—What is the specific gravity of the ore, i. e., how many cubic feet to the ton?

**Mr. Stone.**—I don't remember. The ore is heavy.

**Mr. Channing.**—I think it goes about 8 cu. ft. to the ton.

**Mr. Stone.**—That seems to me to be about right.

**Mr. E. G. Spilsbury.**—How long has it been the practice to use the ultra-violet light?

**Mr. Stone.**—The discovery that willemite could be detected by this light was made in 1896. It was due to Dr. Baskerville and Dr. Kunz. They made a general examination, at night, of all the minerals in the Museum of Natural History. They found that willemite, alone among all the minerals, glowed in this way.

**Mr. Rogers.**—Does all willemite behave in this way?

**Mr. Stone.**—No. Pure willemite does not glow at all. The peculiar property exhibited by the mineral that I have shown you to-night seems to be due to some impurity. It is a curious thing. Almost any impurity seems to make willemite glow, but the pure mineral does not glow.

Samples of products made at Franklin Furnace were passed around at the meeting.

### *Present Cyanide Practice.*

**The Chairman.**—One of our members, Mr. Townsend, who has made a specialty of cyanide practice, has recently been exam-



ining a large number of the mills in the United States and Mexico. I am going to ask him to tell me about his recent observations.

**Mr. Townsend.**—The extraordinary development of cyanidation in the last few years has given it a unique place in the metallurgy of gold that never before was occupied by any hydro-metallurgical process. At present cyanidation is used almost exclusively for treating the low grade silicious ores of gold and silver, which, measured by the tonnage treated greatly exceed all other classes of gold and silver ores. By doing this cyanidation has displaced the four other hydro-metallurgical processes that were used in the metallurgy of gold and silver until within a few years ago. Pan-amalgamation does not extract as much of the silver as cyanidation and the extraction of the gold is very inferior; the cost is generally higher. Hyposulphite lixiviation makes a less extraction of the silver, costs more to perform and requires roasting. Chlorination makes a good extraction of the gold but virtually none of the silver, requires roasting and costs more to perform. Ore-dressing (amalgamation and wet concentration) makes a poorer extraction, though it can generally be performed for less cost. Briefly stated, cyanidation will make an equally good extraction of both the gold and the silver from nearly all ores at a lower cost than most other processes, without the roasting that most other processes require, and in most cases will make a better extraction. It has advantages over other processes that none of them has ever possessed.

As far as our application of the cyanide process is concerned the chemistry is about where it was 20 years ago. The great advance that has taken place has been in mechanical refinement of operations already performed and understood. The improvement in the process and the manner of its application are alike intensely mechanical. The refinement now practiced in many simple operations is noteworthy. Invention has been stimulated and numerous clever appliances have been put on the market, designed efficiently to perform every operation or divide it into several operations. We now grind very finely by doing it, in the largest mills, in five stages and returning for regrinding everything that will not float off in a classifier overflow. We agitate and aerate thoroughly and economically, and, generally continuously. All the new appliances embody the features of continuous operation, automatic operation, and generally a positive quality in their manner of operation.

The superiority of a certain mode of treatment has evolved a type of mill which varies within itself but is otherwise similar in a number of cases. In all these mills a series of operations are

performed in the following order: The coarse ore is broken by crushers in two stages; for the larger mills gyratory crushers are preferred and for the smaller mills jaw crushers. The stamp continues to be installed in spite of all that is said against it and under the present conditions is an economical crushing device. It receives ore about egg size, and crushes it to quarter-inch in solution, using from 10 to 15 times as much ore as solution. Stamps are generally 1250-lb., and often heavier. Under these conditions a stamp duty of 10 tons or better is obtained. For finer grinding a machine with an abrasive action rather than a crushing action seems to be superior, and in this department the tube mill is supreme. It is the invariable fine grinding device and is now successfully used in stages, displacing the high speed Chilean mills. The rotary grinders, such as the Huntington, Bryan and Chilean mills are all but driven out by the tube mill.

In connection with the tube mill several mechanical classifiers have been developed that are much more efficient than anything in existence a few years ago. The continuous settlers have been the means of advancing the efficiency and lessening the cost of operation. Agitation by means of compressed air has become general and the importance of aeration in connection with the agitation of silver ores has been developed. The importance of filtration has stimulated invention in this department and a number of excellent filters have been put on the market. Precipitation and refining are much what they were, but the mechanical arrangements for performing these operations have been improved.

Cyanide mills are now complex, elaborate affairs, requiring delicate adjustment. They are efficient but not nearly as flexible as the simpler mills of previous periods. Their complexity and the greater demands on their machinery have increased the cost tremendously. About 10 years ago when the 850-lb. stamp was standard practice in the Rocky Mountains, putting through three tons per stamp per day, \$1,000 per stamp was regarded as a good rough figure for estimation of the cost of milling plant. Later when the weight of stamps increased to 1050-lb., and the cost of labor and materials rose, the cost of a mill could be more accurately estimated at \$2,000 per stamp. Now the stamp can no longer be taken as a basis of estimation, and \$1,000 per ton of daily capacity will be found the most convenient figure for a fine grinding agitation and filtration plant.

**Mr. Walker.**—What are the relative strengths of cyanide solution for gold and silver extraction?

**Mr. Townsend.**—Solutions about twice as strong for silver as for gold are used. For silver ores up to 0.5%, and for gold ores about 0.25%, and sometimes as high as 0.3% are common.

**Mr. P. G. Spilsbury.**—The question of dilution of pulp was seriously considered at the Santa Gertrudis mill in Pachuca, Mexico. Experiments showed that pulp could be advantageously treated at a 2:1 dilution and the mill was planned on this basis. Later it was found that a greater dilution gave a more rapid extraction and to meet this condition a slight change of arrangement was suggested, viz., the pulp to enter the first set of nine agitators at a 2:1 dilution, flowing continuously from tank No. 1 to tank No. 9, then to Dorr thickeners, the clear charged solution going to the precipitation plant, and the thickened pulp, diluted again to 2:1 with fresh solution, retreated by continuous agitation through the second set of nine tanks. This scheme corresponds in effect to a dilution of 4:1.

**Mr. Peele.**—What extraction have they been getting?

**Mr. Townsend.**—About 90% ; i. e., that is what they will get.

**Mr. Peele.**—Nearly all silver?

**Mr. Townsend.**—Practically all silver. Gold does not count.

**Mr. Finlay.**—Do you know anything about the Clancy process? I hear that it was tried out on a laboratory scale in the Portland mill, but did not get any further. They do not use it in their mill.

**Mr. Townsend.**—I understand that an installation is being made in the Ajax mill, in Colorado.

**Mr. Finlay.**—In the precipitation of gold by zinc the temperature of the solution seems sometimes to have something to do with the extraction. There is a marked difference in the extraction if the temperature is 70 or 80 degrees or only 40 degrees. At Goldfield in the summer the temperature of the solution was 70 to 80 degrees, and the precipitation almost perfect, only 2 or 3 cents per ton remaining unprecipitated. In winter, on the other hand, this would go up to 40 cents. We found that by putting in a heating plant we were able to keep up the temperature of the solution and maintain a good precipitation. At Tonopah in summer the mill temperature was 70 to 80 degrees. At Goldfield we tried to keep it up to 70 or 80 degrees. Anything under that adversely affected the extraction. Another point that we learned was that it is best to do all crushing in plain water,



and then to add the cyanide. If the ore be crushed in a weak solution it seems to interfere with the extraction.

**Mr. E. G. Spilsbury.**—Didn't you add lime in the batteries as that would have the effect of neutralizing the acidity which causes the trouble you mention.

**Mr. Finlay.**—Our superintendent supposed that something in the nature of a very fine sulphide was developed, but he never proved it. There was a difference of about 1% in the extraction.

**Mr. P. G. Spilsbury.**—We had that brought out in the treatment of high grade silver concentrates. After 20 days run we found that in 24 hours the solution became very foul, extracting only 15% after 260 hours treatment. The trouble was that the solution was impregnated with zinc. By precipitating the zinc the solution was regenerated so that 90% extraction was obtained in 20 hours on the same material that previously gave up only 15% after 260 hours treatment.

**Mr. Channing.**—Can any one here give me any information as to the commercial possibilities of treating copper tailings by cyaniding? In the cyanidation of gold and silver how much exposed copper can you stand in the ore before it interferes with the operations.

**Mr. Spilsbury.**—That is a pretty hard question. It depends a great deal upon the condition in which the copper is in and the amount of cyanide that would be used up.

### *The Miami Mill.*

**The Chairman.**—Mr. Channing, who is with us to-night, has just completed a large and interesting concentrating mill at Miami, Arizona. He has offered at my request to tell us about it.

**Mr. Channing.**—The Miami ore is dumped underground into an 800-ton pocket. From there it is loaded by measuring boxes into 7½-ton skips, which are handled in balance, and by them the ore is dumped into a 1000-ton pocket on the surface. It then goes to the shaft crusher-house, where the treatment is as follows:

Crush in two No. 7½ gyratory crushers to 2-in. cubes; thence through cast steel trommels provided with ¾-in. holes, oversize to two 54x24-in. coarse rolls, crushing to ½-in. cubes. The product of the rolls joins undersize from screen, and the whole of the material is elevated by belt conveyor and distributed to six 1000-ton bins, each representing a unit of the mill.

In the meantime the material is weighed on the main belt conveyor, and before entering the mill an automatic sampler is interposed, which cuts out one-tenth of the ore. This is reduced by repeated crushings and dividings until a 40-lb. sample is obtained from 1000 tons.

From each 1000-ton steel bin the ore is fed by an automatic feeder and sampler combined to a small belt to which a weighing machine is attached. The discharge from the belt goes into a launder with a screen bottom, where water is added. This is provided with about  $\frac{1}{8}$ -in. openings, and the dewatered oversize goes to a 16x42-in. high speed Burch roll, where it is crushed to  $\frac{1}{8}$ -in. cubes. The product there joins the undersize from the shaking launder and is divided in two parts, going to the similar halves of the section.

Following one-half, the flow sheet is as follows:

Over two Callow screens of a mesh of 0.024 in., oversize to a 6-ft. Chile mill, at present provided with 0.029 in. screen. The two products join and go to drag classifier, which consists of an endless rubber belt with blades upon the bottom. The coarse material from drag classifier goes to a 10-spigot Richards hindered hydraulic classifier. Product from each spigot to separate Deister No. 2 sand tables, 10 in all. Each table makes headings, middlings and tailings. Headings to concentrate launder, all middlings and certain tailings to single 6-ft. Hardinge mill, which takes care of both sides of the section. Tailings to waste launder. Sand from Hardinge mill to two Deister sand tables, and slime to one Deister slime table. Overflow from drag classifier joins overflow from end of hydraulic classifier, and goes to large conical dewatering tank. Underflow to six Deister slime tables, which make concentrates, middlings and tailings. Concentrates to tank, middlings from both sections to two Deister slime tables, and tailings join waste tailings from sand table and go to water reclaiming plant. Overflow from large settling tank goes to eight smaller conical settling tanks. Overflow from there goes to waste launder, underflow to eight Deister slimers, making concentrates, middlings and tailings. Tailings to waste launder; middlings join coarser slime table middlings and are retreated on above mentioned two slimers.

General tailing from mill after being automatically sampled goes to large wooden conical tanks, underflow to waste launder, overflow to 80 concrete settling tanks. Overflow water returns to mill, underflow joins sand tailings and goes to tailings pond. This pond is provided with a dam made of tailings, back of which the water containing slime is settled and pumped up to the mill. As time goes on the sands will be discharged in front of the dam, making it thus longer and higher, but still preserving the set-

ting capacity behind it for the elimination and disposition of slime. In a couple of years mechanical means will be provided for storing the sand tailings in an adjacent gulch.

The feed into the mill has been about 2.6% copper. Ratio of concentration has been 20:1, and the extraction has slowly climbed from 70% to 76%; it is expected that the promised 80% extraction will be achieved. The concentrate will run about 40% copper, the mineral being nearly pure chalcocite with but a small amount of pyrite present.

The mill consists of six sections, of which three are equipped with two 6-ft. Chile mills each. The fourth section is provided with three Burch high-speed fine rolls, and they will shortly be used for fine crushing for comparison with the Chile mills. The Burch roll is provided with a fleeting movement by which one roll is slowly moved laterally in front of the other in the direction of the axis of the roll so as to prevent grooving.

The mill was originally designed so that the six sections would have a capacity of 2000 tons a day, but it seems evident that this capacity will reach 3000 tons a day. All of the machinery is electrically driven by either induction or synchronous 440-volt 25-cycle A. C. motors.

**Mr. Finlay.**—Have you any line on the amount of power you will use?

**Mr. Channing.**—Two sections took 378 kw. I estimated to-day that for treating 2000 tons a day, running four sections, we will probably take 1000 kw. = 1400 h. p. That will do everything; pump the water and crush the ore. Probably arrangements will be made so that we will do crushing for 8 or 10 hours, and then pumping for 8 or 10 hours. The mill itself will probably take 720 kw. This will leave 280 kw. for grinding of ore one-half day, and pumping the water the other, so as to keep a steady load of 1000 kw.

**Mr. Finlay.**—What do you figure a horse-power will cost per year?

**Mr. Channing.**—I have always figured from \$72 to \$75.

**Mr. Finlay.**—What is the ratio of concentration?

**Mr. Channing.**—About 20 to 1. It varies from 18 to 21.

**Mr. Finlay.**—Do you expect it to diminish as you get to the lower part of the mine?



**Mr. Channing.**—It may change in 8 or 10 years, but there will not be much difference. It is a pretty complete change in our case from pyrite into chalcocite. Mr. Aldridge in the Inspiration mine gets a little more pyrite than we do.

**Mr. Aldridge.**—Yes, I believe we do.

**Mr. Channing.**—There is nowhere near as much pyrite as at Cananea. In our case the alteration of the pyrite has been pretty thorough. The only thing we need to look out for is that at certain places the chalcocite has changed into silicate. I suppose we have 1,000,000 or 2,000,000 tons of ore that will run 2.5% copper, that is, silicate of copper, and some mixed silicate and chalcocite.

**Mr. Finlay.**—What is the object of using cylindrical ore bins?

**Mr. Channing.**—Simply that they are the cheapest method of storing the ore. They are steel bins with concrete bases. All of our concentrator is steel and concrete. At the power house and pump house, nothing can burn except the doors and window frames. In the mill the only wood is a thin layer of boards on the roof, over which is Johns-Manville asbestos roofing. The mill is painted a smoky white or gray and the roof is the same color, so that it makes quite a pleasing landscape, and it will be cool in summer. The power house is also painted so as to fit in with the landscape.

**Mr. Peele.**—What are the dimensions of the stack?

**Mr. Channing.**—200 ft. high, and a 10-ft. opening at the top.

**Mr. Finlay.**—Is the Miami mill like the Nacozari mill?

**Mr. Channing.**—At Miami the mill is erected in units, the Nacozari mill is not in units. Each section is by itself in our mill. The topography is such that we can build 20 sections if necessary, i. e., we can build a 10,000-ton mill.

**Mr. Walker.**—I think we have had a very interesting evening. I move that we extend a vote of thanks to the Chairman, Mr. Townsend, and to Mr. Channing, for the very enjoyable and instructive evening they have given us.

Unanimously carried. The meeting was then adjourned.

A. L. WALKER,  
*Secretary of Section.*

**SAN FRANCISCO.**

A meeting of the San Francisco section was held on May 11, at the Techau Tavern, San Francisco, following dinner at 6.30 p. m. S. B. Christy, Chairman, called the meeting to order, the following members and guests being present: S. B. Christy, C. W. Merrill, F. W. Bradley, J. B. Keating, T. T. Read, B. B. Meek, Douglas Waterman, W. S. Noyes, H. F. Bain, A. D. Foote.

**The Chairman.**—The Secretary will read the minutes of the last meeting.

**H. F. Bain.**—As the minutes have been published in the Bulletin and circulated among the members of the section, it may not be necessary to read them. Our last meeting was merely a business meeting. Among other things, we appointed a committee to suggest a few amendments to the constitution.

**The Chairman.**—I will state that the committee was appointed, and the matter considered by it at length. It drew up some resolutions, but as this is an open meeting, probably they had better not be considered now. I sent a memorandum of the recommendations of the committee to the Secretary of the Society, and he asked me to postpone action until the matter could be brought before the Executive Committee. I think it would be well to let the matter rest in abeyance until that is done.

The subject for discussion tonight is one which has taken a great deal of the time of the Society and a very elaborate and careful report has been presented by a committee consisting of Messrs. Walter Renton Ingalls, J. Parke Channing, James Douglas, J. R. Finlay, and John Hays Hammond, representing this Society, the American Institute of Mining Engineers and the American Mining Congress. They have undertaken to draw up an act, embodying a uniform mining law for all the States, for the prevention of mining accidents, that is, the form of a law which may be adopted by any State legislature, which will secure greater uniformity than now exists. The subject is one of very great importance. It has not been discussed at all in the West, although it has been very carefully discussed, perhaps at undue length, in the East. But it is a matter that must be met in that way, or else it can hardly be said to be discussed at all. It was suggested that our section had not discussed this matter at all, and that we ought to consider it.

Attention has been called in this report to the fact that California has had no State law upon the subject, and that in all probability the number of mining accidents in California is proportionately large. There is no way of gainsaying that state-

ment, because there are no statistics upon it. My impression is that the number is not abnormally large. But it is impossible to answer the question by statistics, because none have been kept—as they should have been. The question is one that always appeals to most of our mining men, however, rather unfavorably, that is, they have looked rather askance at mine inspection, because they knew that in most cases it meant blackmail. I have always thought it might have been better if the mining operators themselves had suggested proper legislation to cover the ground, which is sure to come sooner or later—has, in fact, already come in this State, for a bill has recently been passed by both houses of our Legislature, needing only the signature of the Governor to make it a law, calling for the appointment of an Inspector of Mines in this State. It seems advisable, in view of that fact, to consider what the duty of such an officer should be, and for that reason it is in order to discuss this paper. It covers a very large number of pages, one of the largest Bulletins, No. 28. It is for this section to say whether or not it will approve the suggestions made by the committee. I am glad to see Mr. Foote with us; he has had some experience along these lines and I am sure can give us the benefit of it.

**A. D. Foote.**—What, the discussions in New York?

**The Chairman.**—Yes. There have been a good many discussions on the subject. We will hear from Mr. Foote.

**A. D. Foote.**—I am afraid that in some respects I would look at it as would an old Irish shift boss who had had five or six years' experience. Just imagine him sitting there in that chair:

"To hell with you and your law and regulations. Begad, they'll be making a man button his shirt up the back, and have three buttons for safety—where he could not reach them. To hell with it all. Tell me how to open the gate to a cage? Begorra, I never saw a gate on a cage but once in my life, and that went out in three weeks. You want us to shove that car into the cage with the gate open, and then when we get it on, we shut the gate."

My idea of such a bill is that it should be very general, should go very little into detail, putting power into the hands of the inspector to see that things are safe, and the power of complaint with the men, in such a way that they could make complaint without being found out. The inspector with his deputies should see the men and get to them as often as possible. Moreover, I think the inspector should be an employee of the mining bureau—or its chief. In that way, a good deal of information could



be obtained that could be published by the mining bureau, and made of use to the average superintendent, and of value. But as to outlining the details, as the committee has attempted, to write a bill to apply to all kinds of mines, and to undertake to tell in detail what the shift boss shall do, seems to me perfectly absurd, and utterly impossible. If you do pass such a law, it will just lie in the statute books—it never will be executed. It seems to me the committee is on the wrong track entirely. There should be a very general law, then an inspector, with a salary big enough to attract a good one, with money enough allowed him to have all the deputies he needs, and with power to enforce changes where dangerous machinery is in operation, or men are handling the powder badly, or anything else is wrong.

**F. W. Bradley.**—I think the names upon that report are a guaranty that it has been carefully considered and carefully prepared. The immense amount of detail, however, I think ought to be in the way of suggestion, and not mandatory, because it would be very difficult to make a general law applicable in detail to all classes of mining. If the details reported by these gentlemen are in the way of suggestion and advice, it is very valuable. But if they should be made mandatory, they would be impracticable as applied to some classes of mining, and would not at all fit conditions in any of our California mines. I agree with Mr. Foote that mine inspection is valuable, and inspectors should be allowed a great deal of discretion. They should be controlled by common sense, and not by a set of rules; rules being simply in the nature of advice and the result of experience of all those who have handled large operations and know what should be done to avoid accidents. In our California mines we are not subject to all the dangers that exist in coal mines, and the class of labor here is generally very intelligent. I think that if an inspector were appointed by the Governor, with discretionary powers, the results would be very satisfactory. But with an inspector elected by political pull, or selected by that same pull, and with a set of rules to govern him I think the results would be disastrous.

**C. W. Merrill.**—I had the pleasure in New York of listening to the discussion covering a large part of this proposed bill. It occurred to me then that if the bill were sent to the Director of the United States Bureau of Mines as a suggestion, with the further request that he get in touch with those inspectors who have had practical experience, he might then judge, from the replies that he got, as to the practicability of this bill. Eventually a standard might be brought out which could be recommended to the various States for the attention of their legislatures.

**The Chairman.**—I think that this last suggestion about the inspectors of mines would hardly be practicable in most of the States, because in a great many of them the mining inspectors are political appointees, and in many cases are not educated men. Of course, in some of the coal mining States a certain amount of care is taken. But the type of inspector that is carried in mind throughout this report is a very much higher type than any existing at the present time. I will read what the report recommends in that respect:

“The Governor of the State, by and with the advice and consent of the Senate, shall appoint such Inspector of Mines. The Inspector of Mines shall be at least thirty years of age, a citizen of the United States, a resident of this State for at least one year previous to his appointment, and shall be practically engaged in metalliferous mining, and shall have had at least ten years’ experience in underground mining in the United States of America. The Inspector of Mines (but not the Deputy Inspectors) must have been for at least five years in charge of a mine in the United States of America, employing fifty or more men underground, to be qualified for such office.” And the qualification for the Deputy Inspector is the same except that he must have been two years in charge of a mine, employing at least twenty-five men underground. The men now appointed inspectors in most of the States are men who are, at best, practical miners, who have no engineering education, except such as they may get from correspondence schools. Of course, there are exceptions, but most of them are of that type. The rest of the qualifications here presented are unimportant, but a man who has had responsible charge of a mine for five years is an entirely different type of man than the inspectors that we have had; I think it is a very high standard, that it would be difficult to fill that place, unless they paid the man a good salary.

**A. D. Foote.**—I thought that the bill in our State Legislature for this purpose was killed.

**The Chairman.**—No, it passed both houses. Whether the Governor has signed it, or not, I do not know. It provided for a salary of \$3600. But if a man of this type is to be appointed, that is too small a salary to attract him.

**C. W. Merrill.**—Inspectors should certainly be those who have had practical experience.

**The Chairman.**—I think all of these men are men of practical experience. As to Mr. Foote’s criticism about details, I have felt that probably that is a mistake. But nevertheless, it is per-

haps just as well to go over these details, because it is important to think of all the various things that might happen, and it is not necessary, of course, to incorporate them all in any State law. But to have a bill which may apply to any mine, it must provide for all possible contingencies. Still, when you come to apply it to any one of a group of mines, the bill might be simplified by omissions. But, as the rules have to cover all cases, they have to be in detail. The laws in a particular State might be much reduced as to detail.

**F. W. Bradley.**—For example, in California, at a mine on the Mother Lode, where they never have lightning, they would not want to have a powder house built with lightning rods.

**The Chairman.**—Of course, there are situations like that that would not apply.

**C. W. Merrill.**—Suppose Governor Johnson signs the bill, and has to appoint an inspector. It seems to me that if he had a pamphlet just like this before him, it might be of considerable assistance to him in making the selection.

**The Chairman.**—It will necessarily be very hard to get the right sort of a man, and unless he is the right sort of a man, the law will be a failure. Mr. Noyes, have you had time to read this paper?

**W. S. Noyes.**—No, I have not seen it. It was called to my attention, but I have not read it at all.

**The Chairman.**—It has been very carefully considered, and worked over very faithfully, and I think it is a very creditable piece of work.

**A. D. Foote.**—I agree with you there. There has been a very great deal of work upon it, but I think it was misplaced entirely.

**The Chairman.**—There is, of course, such a thing as tying a man so thoroughly, that when you throw him overboard he can't swim.

**A. D. Foote.**—The result would be, I think, that the law would not be carried out at all, would not be enforced at all. It would be as dead a letter as our bell law is in this State. Nobody can work with those bells. We have got them posted all over the mines, but nobody uses them.



**The Chairman.**—Have you had time to read the recommendations carefully, Mr. Foote?

**A. D. Foote.**—Yes, I read the whole thing carefully, especially that point about the gate, where it is said that the gate in the cage must open in. I never saw a gate on a cage, anyway, but if you open it in, you have got to take your men all out in order to get the gate shut.

**The Chairman.**—Have you any comment to make, Mr. Noyes?

**W. S. Noyes.**—I think the subject has been covered very thoroughly. I think there is too much detail in the law as here proposed.

**A. D. Foote.**—That law, as proposed, will be utterly a dead letter. It will never be enforced—that will be the trouble with it—because it can't be enforced.

**H. F. Bain.**—I have here a copy of the proposed California law, which has passed both houses of the Legislature. This is the Williams law, and from what Mr. Foote has said, I should judge this would about meet his criticism. That is, it provides for the appointment of an inspector; and a possible deputy, and makes this inspector and deputy responsible for seeing that conditions in the mines are safe. Any three miners, or other people, can bring complaint to the inspector without revealing their identity, and he is then obliged to give notice to the superintendent and, as soon as practicable, to visit the mine and ascertain whether the appliances are safe or not. If, for example, he finds the engineer is incompetent, he must file a statement to that effect, and a demand that the engineer be discharged. It then becomes the duty of the operator to discharge the engineer. If that is not done, or if the conditions of which the inspector complains are not remedied within three months, and any accident occurs, his report becomes *prima facie* evidence of negligence on the part of the operator. The terms are very general, and matters are very largely in the power of the inspector. There is no penalty except that if his recommendations are not carried out, that fact becomes *prima facie* evidence in court against the operator. The salary here proposed is \$3600. As to salary, I would say that I think it might be very possible to get a man for that salary, or less, who perhaps would not come up to the full letter of the requirements, but still would be very satisfactory. You all perhaps remember meeting Mr. Sumner Smith, who was with us one night, who is a graduate of the University here, and who had three or four years' experience at least

as a foreman in one of the smaller mines in Shasta county. He has had considerable experience beyond that, in fact. I notice that he has just been made Inspector of Mines in Alaska. His salary in that position is \$3000. He has been serving this year for the Bureau of Mines, in charge of one of its mine-rescue cars, and I think he is a very excellent type of the young man really interested in the work, who could be attracted to this work if given the right sort of backing and the right kind of support. As to the need of inspection, personally I think there is considerable need of it. I have been very much surprised in visiting California mines to note the absence of shaft gates. I do not believe that a deep vertical shaft should be left without some protection at the surface and at levels to keep the men from walking into it. There are shafts in this State, and many of them, at which there is absolutely no protection at the landings or at the surface, where a man could easily fall down the shaft. At some places there are open chutes in the platforms of the levels, and they are not very well lighted levels either, where men might, and indeed, have, walked right into them. I have also been very much surprised to see the crude and primitive system of signals in many very good mines in this State. These mines are run by men who are excellent managers, and have my very high respect for their ability. But they are men whose experience has been local. They have never seen what has been done elsewhere; they have no one to come and tell them what has been done elsewhere; they do not realize what can be done, and therefore do not see the necessity for improvement. Furthermore, as perhaps all of you realize, a good many California mines just about pay their own way, and if the superintendent is managing to make a little money for his company, or is managing to pull out nearly even, he does not want to ask for additional money for anything he can possibly get along without. It seems to me at this day, in all the Western States that I have known, there is a field for the right sort of a mining inspector. The single weakness in the California bill, as I have glanced over it, is in the fact that the appointment of the inspector is made by the Governor without any statement of qualifications or any record whatever. The Governor, of course, is supposed to appoint a competent man, and I have no doubt the present Governor will do so. We have had Governors who would not appoint a man of that sort, that is, they would be too easily persuaded of the competence of the men they were otherwise urged to appoint. Possibly it would be wise to insist upon some sort of standard of qualifications. I think the report submitted by the committee of this Society, which we have been discussing, is valuable if only for setting standards. I do not think that

the committee itself would urge that this particular law be passed in any given State, or that any attempt be made to force its adoption. But, as a set of standards, an ultimate ideal, I think that it may be serviceable.

**T. T. Read.**—Mr. Foote, with the quick insight of the practical man, has immediately put his finger on the difficulty of this law. It is practically like requiring a man to work everything out to the sixth place of decimals. The making of profits is contingent on leaving undone anything which can safely be left undone. As to the suggestion of putting it all in the hands of an inspector, that also involves difficulties. We all have in mind that the opportunity for favoritism which any system of inspecting would allow to come into play, will require for the position an ideal sort of man, and the difficulty of securing any such man at a low salary immediately comes up. I was just today talking with Mr. C. G. Yale, of the Geological Survey, who was complaining very bitterly of the impossibility of keeping assistants in his office, because the kind of man that he could get to stay there for the salary is the kind of man who cannot pass the examinations required for the place. So he is just now obliged to get along with merely a stenographer in his office. Whether a man could be secured to meet all of the requirements of this law seems to be rather doubtful. It is quite possible this is set before us as an ideal to work toward, with the expectation that it will be toned down in practice and made more practical in that way. I think the point that Mr. Bain brought out is one that should be emphasized, that people are apt to think that you cannot do things which you are not used to doing. In the Lake Superior mines, when copper used to be high, they thought they could not run a mine with copper cheap. But when the price of copper went down and they had to do closer work, they found that they could.

**W. S. Noyes.**—I also have noticed in this State the same lack of protection to shafts, above and below ground. I have seen some of the biggest mines in the State running without any protection at the collars of shafts where a man is liable to slip and fall into the shaft. I think, however, an inspector often forgets the question of discipline among the men. The majority of accidents that I have had knowledge of resulted from the carelessness of the men themselves. Recklessness seems to be more prevalent among miners than among other occupations, and inspection ought to take some cognizance of that feature.

**The Chairman.**—I agree with Mr. Bain about the importance of protecting the openings to shafts. I came within an ace of



dropping down into a shaft 800 ft. deep myself, a mine Mr. Foote used to be acquainted with, although he was not in charge of it. I was down at the 1200 ft. level with a transit. Just as we got down to the station, a dash of water came down the shaft and put the lights all out, and we had to climb onto the station in the dark; finally when we got our lights, I had lost my bearings, but to make up for lost time started out posthaste, and I suddenly saw the light flash up against the wet, shining face of the shaft. One step more and I would have gone down 800 ft.! I said to Ross Browne, who was with me, "That was a close call!" and I felt rather weak in the knees for about a minute. Just one step more and I would have gone in head first, as there was no protection whatever there. I owe the last twenty years of my life to the sudden reflection of that candle flame.

That is of course one example of the needs that we have to look to, among the thousand and one. But I think it is most important to make certain that a competent man shall be appointed inspector, a man with experience, not too old, not too young, and with a good deal of courage and common sense. Unless that is done, the whole law will become a dead letter anyway, but if a competent man is appointed we are pretty sure to come out well in the end. We are certain to have a mine inspection law in this State. If it does not come by reason of the bill passed by the last session of the Legislature, it will come the next one, or at some time not far off. I think that the Society could do hardly anything more important than to formulate recommendations as to the most vital things to be regulated. I think this is an important field of work, and while we may find fault with some work here and there proposed, and something else may not be necessary, I believe it is the kind of thing we should start in to do. I believe that we ought to feel and express a great deal of gratitude to the men who have devoted their time and energy to the drafting of this tentative form of regulations. I understand that the Bureau of Mines is going to take up this matter and carry it to a further state of development. The coal mines, of course, have had inspectors for a long time, and we realize from the number of accidents that still occur how little they have accomplished. There is an opinion among engineers that the fatality in metal mining is also quite large. The mere having an inspector would yield more accurate knowledge on the subject, and lead to the saving of a great many lives. I feel sure that public opinion is going to demand that more regard be paid to human life in mining. Perhaps it will go too far. I think the appointment of a good man, who knows what it is to have responsibility himself, will be a great help to the honest and capable mine operator, in protecting him from unreasonable

and unjust damages claimed by men who are careless of their own lives. It should be one of the duties of an inspector to ascertain just the extent to which men are careless of their own lives. I remember going through a mine in Pennsylvania, and we came to a place in the drift, where there had been a fall, making a gas pocket, I suppose, about 5 or 10 ft. up, and I was then told that a man lost his life there—that an inspector went in there with a safety lamp in his hand, testing for gas, with a naked light in his hat! Of course that was the last of him. That is an example of what you have to contend with. There is no way to protect a mine manager against such carelessness as that.

**H. F. Bain.**—I would like to ask Mr. Bradley what amount of authority the mine inspector has in Alaska.

**F. W. Bradley.**—I do not know the provisions of the mine inspection bill for Alaska, but I believe that a very excellent choice has been made in appointing the inspector, and it will undoubtedly result in good. The mine inspector for Alaska is a Federal appointee. The present choice is a very happy selection indeed, and I know that it will result in good, and whatever the bill may require, if all the details and provisions that our committee has carefully studied out are held up as an ideal, it will undoubtedly result in good. I think that in the Alaska law there are no arbitrary details to complicate the situation, and that, with intelligent inspection, it will result in a great saving of life.

**The Chairman.**—I would like to ask Mr. Keating how he thinks the mine owners and operators in California would feel towards the appointment of a mine inspector, if he were an honest and capable man?

**J. B. Keating.**—I think they would welcome him. In Montana we had a mine inspector who used to visit the mines regularly and make suggestions that were very generally welcomed. Oftentimes the operator would be so engrossed in the details of his work that he would not see some of the points that the inspector would call to his attention until they were so brought out. Often they discussed it pro and con, and we never felt that an inspector was an enemy in any sense of the word.

**The Chairman.**—One other point I think might be brought out. The discussion seems to indicate a unanimous opinion that the inspectors ought to be appointed and not elected.

**H. F. Bain.**—I think it is unanimous.

**A. D. Foote.**—No question about that.

**The Chairman.**—The California bill in general is very good, I think, but it is defective in that it contains no stipulation as to the qualifications of the inspector.

**Douglas Waterman.**—I think every mine manager, who is in charge of a large mine, has the interest of his men at heart and will take every precaution to avoid accident. A mine inspector might be of great value to a mine manager, a young man for instance, who is unfamiliar with mine signals or with the operations at the larger mines where precautions are taken to avoid accidents. In Salvador, I will say that, as a mine manager has to be first-aid to the injured among the natives under his charge, he takes very good care that no accidents occur. I think an inspector appointed by the Governor, with recommendations from mining men as to his qualifications, would be of great benefit. We have no inspection in Salvador. If an accident occurs, resulting in the death of a miner the local *alcalde* comes to the mine and inquires into his death. But I do not know of any law that compels inquiry into the cause of an accident, that is, as to the culpability of the mine manager. We are not required to pay damages.

**The Chairman.**—Is any one posted as to how the laws operate in Mexico? I have heard conflicting accounts as to them. Some of the details of the Mexican laws, which are on the style of the German and other Continental laws, are extremely minute. Such minuteness is foreign to our case. I think, however, that Americans are reckless of life to an extent that is entirely unjustifiable and unnecessary. Do not all of you think that is true?

**A. D. Foote.**—I don't think a careful manager is reckless of his men. It costs too much to kill a miner, even looking at it as a purely financial matter. It costs about \$1500 to kill a man in our mines.

**F. W. Bradley.**—And it costs about \$12,000 to hurt one.

**A. D. Foote.**—I think that self-interest protects the men to a great extent. I mean the self-interest of the miners.

**The Chairman.**—Are there any other comments?

**A. D. Foote.**—A point I meant to make refers to the advantage of the inspector to the whole community. In going around, he sees those places where, for instance, they need gates at the shafts, he sees other places where they have different questions to solve, and if he were connected with the Mining Bureau, he



could publish reports from time to time, giving the information to those men that haven't it, and describing the best means of protection for chutes and shafts and various other contrivances that he may see. If it were possible in this State, where we have a Mining Bureau, to have the inspector connected with it, a good deal of information could be spread abroad that would be of value to the mine owners.

**H. F. Bain.**—In that connection I may say that the California law contains the following provision as to the report of the inspector: "But shall contain no other statement which will afford any information as to the working or the extent of the development or character of rock in said mine or quartz mill." And in another section the following: "Neither the said Inspector of Mines and Quartz Mills nor any Deputy Inspector shall make known or disclose to any person or persons whomsoever any information as to the character of the rock contained in any examined mine or quartz mill, the value thereof, the course or dip of any vein or ore shoot therein, or the direction or extent of any level or upraise, or stopes therein, or of the quantity of ore removed therefrom, or any other information regarding the condition of the mine or quartz mill not necessary to be reported upon, as required by this-section," etc. Apparently the framers of this act intended that the function of the inspector should be confined exclusively to questions of safety, and took particular pains to provide that his entrance into the mine, which is granted by the act, should not be the means of disclosing information in regard to that mine to other people. That would seem to preclude the possibility of his being a general agent of the Bureau of Mines, as we have it in California, or of being used for other purposes. The reports of the mines inspectors of the different States do usually contain a large amount of information, some of which is quite valuable, and to very little of which, I am sure, the operators would have any objection. In the coal mining States, much information is given the operators by the State Mining Inspector. It is quite possible from a study of their reports to get very complete knowledge even as to the thickness of the coal in various parts of the State, as to its depth from the surface, etc. In the East and Middle West they have a very different ideal from what we have here. It seems to me, in view of the fact that this act has been passed by both houses and is before the Governor for signature, that the practical thing is to decide whether we individually or as a body wish to make any recommendation to the Governor in regard to his signing the bill, or whether we wish to make any recommendation as to the qualifications that should be kept in mind in making an appointment, in case one is to be made.

**The Chairman.**—I do not remember the day on which the

Legislature adjourned, but every bill that is not vetoed by the Governor after the Legislature adjourns becomes a law.

**B. B. Meek.**—And I think to-day is the last day.

**The Chairman.**—As such an officer is likely to be appointed, unless the Governor vetoes the bill, I think it is quite important that we should endeavor to assure the appointment of the right kind of a man, and the passage of the right kind of legislation in the future. This office might incur infinite mischief to the mining industry of the State, or it might be very helpful. I agree with Mr. Foote that if such an officer could issue reports, with drawings, sketches and plans of safety devices that he had seen in various mines, it would be of great educational value to the operators, many of whom are men who have merely invested their money in mines without any training as engineers. I think, however, that the combination of mining inspection with the State Mining Bureau might perhaps be more successful if the organization of that Bureau were a little different. Naturally, they ought to go hand in hand.

**A. D. Foote.**—Of course it will have to be reorganized if that is to be done.

**F. W. Bradley.**—I appreciate the idea of the proposed mining inspection bill for California in preventing the mining inspector from giving any information as to the value of ore, but I would enlarge on Mr. Foote's suggestion that he compile information as to safety appliances and improvements in apparatus and methods. It would be of great value to the State if the publications of the State Mining Inspector should contain data regarding the shape of orebodies—by that I mean the direction and pitch and outlines of ore-shoots that have been uncovered in the different workings that he inspects. It often happens that a mine is supposed to be worked out and is shut down, but afterward is re-opened. More development work is done, and another ore-shoot or the extension of an old ore-shoot is found. These reports should describe the shape and occurrence of orebodies or shoots. In time such information would be of great value and would lend encouragement to the reopening of mines that are supposed to be worked out.

**The Chairman.**—I think that in all probability the reason the duty of inspector was restricted so that he should not give out information as to the value of ores, was to meet the objection of some of the mine operators who claimed that the inspector would give away their business. I think that was the reason for that. I agree with Mr. Bradley that information as to the course of

ore-shoots and the general geometrical relation of orebodies to the vein, would be of great value, but I do not think that is the duty of a mine inspector, whose purpose is to prevent accidents. The diverting of his attention from the main issue, it would seem to me, is liable to diminish his efficiency in that line. That ought to be the duty of the State Mining Bureau or of the Bureau of Mines at Washington. It would be a different function entirely. It is a very important one and a very valuable one also, but I think to require the inspector do that in addition to all the other things he has to do would be impracticable. This bill provides that inspectors shall visit every mine in the State twice every year. In a State as large as California that is a big task. I would call attention also to the fact that one State spends \$25,000 a year for the inspection of mines; another State spends \$10,000. The committee making this report considers that the amount in each case is entirely inadequate, and that \$100,000 to \$250,000 is little enough, which is true if the work is to be done properly. The State of California, I think, spends \$50,000 a year, perhaps it is only \$25,000, for the State Mining Bureau. It would be a pretty good thing for it to undertake to give the information that Mr. Foote speaks of. Don't you think, Mr. Bradley, that it is true that it would be unwise to give the inspector too much of a jurisdiction, so to speak?

**F. W. Bradley.**—It is proposed that a mine inspector shall be a man of many years' experience and a competent miner. If he really is a competent man, it would save a great deal of expense if, in addition to his labors on safety apparatus and the methods for preventing loss of life, or for reducing the inevitable loss, he also incorporated in his reports information that would be of benefit to the State at large. If he is qualified by experience to be a mine inspector, he could easily meet this additional requirement and thereby save the State a great duplication of expense for salaries and printing of reports. One general report a year on the mining industry of a State should be sufficient.

**C. W. Merrill.**—I offer the suggestion that the Secretary be instructed to communicate to the Governor of California the sense of this section of the Society, that competent mining inspection is desired. Also to send to the Governor for his guidance and instruction, if he cares to avail himself of it, a copy of this proposed bill that has been so carefully prepared by the committee of our Society.

**F. W. Bradley.**—I second that motion.



**The Chairman.**—You have heard the motion, gentlemen, but I must raise the question whether it is in accordance with the constitution and by-laws.

**A. D. Foote.**—I question that.

**The Chairman.**—We certainly can do it acting as individuals, but whether we can do it as a Section, or not, is debatable.

**A. D. Foote.**—I question whether the Society as a whole can do it, and it is a question whether a Section of the Society can do anything of that sort. It would be committing the whole Society to it.

**C. W. Merrill.**—My motion was that it be the sense of this Section.

**The Chairman.**—That is just the point in dispute. We have had quite a little issue on it with the Council as to our rights in the matter, and it is still under debate. Your committee has suggested an amendment to the by-laws giving us the power to do that. This is an excellent example of the necessity of an amendment to the by-laws which shall give the right to each Section (under such conditions as shall prevent hasty action) to go on record as a Section without committing the Society as a whole on questions of public importance. An Inspector of Mines is about to be appointed in California, and under our present by-laws, the California section is forbidden to advise the Governor as to the qualifications of the man who should be appointed to fill the place. In short, the present by-laws act to prevent the very purpose for which the Society was organized. It must be evident to all our members that the by-laws must be amended in this particular if our Society is to do effective work. But I see no objection whatever to Mr. Bain's doing it as a private individual, and sending the Governor a copy of the Committee's report, Bulletin No. 28, which is public property now. Will that meet your idea, Mr. Merrill?

**C. W. Merrill.**—Yes, I accept that.

**A. D. Foote.**—You might send him a copy of our discussion here this evening, when the notes are written out.

**C. W. Merrill.**—I think all he would welcome would be a little guidance in the matter.

**The Chairman.**—I think so, and I think he would welcome that, too, but at present we have no right to do so officially.

(It was thus arranged that Mr. Bain, in his private capacity,

should send the Governor a copy of Bulletin No. 28, containing the full report of the Committee on the Prevention of Mine Accidents.)

**H. F. Bain.**—I move that a vote of thanks of the San Francisco section be extended to the gentlemen constituting the Committee on the Prevention of Mine Accidents for the preparation of their report.

The motion, duly seconded, was carried unanimously.

**H. F. Bain.**—I would suggest that as probably all the members of the Society have read that bulletin in which the Philadelphia Section presented a report on a proposed code of ethics, it would be well to offer some expression of gratitude for the splendid work done by our Philadelphia associates.

**The Chairman.**—Would it not be well to have it up for discussion some evening? I thought, in view of the fact that we are going to have a State Inspector of Mines, it would be better to bring up first the topic that we have already discussed. For those of our members who have not read the report of the Philadelphia committee, I suggest that it is well worth reading. If we are to discuss this code of ethics, it should be after having the recommendations read.

**C. W. Merrill.**—I move the Secretary be requested to read it. (The motion prevailed, and Mr. Bain read the entire report from the March Bulletin.)

**The Chairman.**—You have heard the recommendations. Is there any action to be taken upon them, or any comment to be made?

**C. W. Merrill.**—I move that it be the sense of this meeting that we express our appreciation to the Philadelphia Section for their accomplishment and also our approval of the code of ethics as just read.

The motion, duly seconded, was carried unanimously.

The Section then adjourned, to meet September 4, or at the call of the Chairman, the subject for discussion at the next meeting being plans for the entertainment of the engineers visiting San Francisco in connection with the October meeting of the American Institute of Mining Engineers.

H. FOSTER BAIN,  
*Secretary of Section.*

## CHANGES OF ADDRESSES.

Du Bois, H. W. ....	Hydraulic, via Ashcroft, B. C.
Finlay, J. R. ....	52 William Street, New York
Prichard, William A. ....	Santa Cruz de Alaya, Sinaloa, Mexico
Stow, Audley H. ....	Pocahontas, Va.
Wethey, A. H. ....	40 West 59th Street, New York

## MEMBERS ELECTED IN MAY, 1911.

Allen, John H. ....	82 Beaver Street, New York Consulting Metallurgist, Knox & Allen.
Bradley, Philip Read. ....	35 Wall Street, New York Consulting Mining Engineer, Exploration Company of New York.
Clevenger, G. Howell. ....	Palo Alto, Cal. Professor of Metallurgy, Stanford University.
Kimball, Edwin B. ....	209 Hillside Avenue, Piedmont, Cal. General Manager, Esperanza Consolidated Oil Company.
McClelland, James F., Drawer C, Yale Station, New Haven, Conn.	Professor of Mining Engineering, Yale University.
Mendenhall, W. C. ....	Washington, D. C. Geologist, U. S. Geological Survey.

## PERSONALS.

J. R. Finlay, who lately resigned as general manager of the Goldfield Consolidated Mines Company, has returned to New York and opened an office as consulting engineer at 52 William street. He has gone to Michigan upon professional work in behalf of the State, which will occupy him until the latter part of August.

Prof. Charles H. Fulton has resigned the presidency of the South Dakota School of Mines, Rapid City, S. D., and has accepted the chair of metallurgy at the Case School of Applied Science, Cleveland, Ohio.

B. B. Lawrence has been making an extensive trip through the Northwest, including a visit to British Columbia.

William Seward Mann is building a stamp mill and cyanide plant for the Pílones Mining Company at La Portilla, Durango, Mexico.

Prof. A. L. Walker intends to make a European tour this summer, especially for the purpose of visiting the principal mining schools of Great Britain and the Continent.

R. T. White, general manager of the Balaklala Consolidated Copper Company, has resigned that position in order to become general manager of the Braden Copper Company, at Rancagua, Chile.



# Mining and Metallurgical Society of America

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Vol. IV

July 1, 1911.

No. 6

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## ANNOUNCEMENTS.

**Meeting of the Society.**—In conformity with the requirements of the constitution of the Society I hereby call a meeting of members at my office, 42 Broadway, New York, on Monday, July 31, at 4 p. m., to consider proposed amendments to the constitution and by-laws adopted at a meeting of the Society on June 15, 1911.

J. PARKE CHANNING, *President.*

This meeting is of formal character, for further action upon the amendments to the constitution and by-laws introduced at the meeting of the Society on June 15. Under article VIII of the constitution proposed amendments must be sent to all entitled to vote, at least 30 days in advance of a second meeting called for their consideration, at which meeting the amendments may be altered as to wording but not as to intent, after which they must be submitted to a final vote of the membership by sealed letter-ballot. The proposed amendments are communicated to all members in the report of the meeting of the Society on June 15, published in this bulletin, and the above notice of a second business meeting is issued in conformity with the requirements of the constitution.

*Members who do not expect to attend the meeting called for July 31 are requested to execute the proxy inclosed with this bulletin, making it out in the name of some member who will attend.*

**Prevention of Mine Accidents.**—The U. S. Bureau of Mines is going to take up the work of the committee on uniform legislation for the prevention of mine accidents, which has been under discussion by this Society during 1910-11, and proposes to study further the development of a system of rules and regulations looking to greater safety in metal mining in this country. For this purpose the Secretary of the Interior has appointed Messrs. W. R. Ingalls, James Douglas, John Hays Hammond, J. R. Finlay and J. Parke Channing, as consulting engineers in the Bureau

of Mines, and under instructions from the Director of Mines these gentlemen are constituted a committee within the Bureau of Mines to continue the work inaugurated by them as an unofficial committee.

W. R. INGALLS, *Secretary*.

### MEETING OF COUNCIL.

A meeting of the council was held on Thursday, June 15, at the Engineers' Club, New York. Members present were Channing, Chance, Garrison, Ingalls, Lawrence and Richards.

The Secretary exhibited some bound volumes of the bulletin of the Society to illustrate the style of binding that can be obtained under conditions previously reported. The Secretary was authorized to announce that bound volumes of the bulletin of the Society for the current year be offered to members at \$1.25 per copy.

The Secretary presented a report of the special committee, consisting of himself and Dr. Chance, appointed at the meeting of May 5, to give further consideration to the matter of the adoption of an emblem and badge for the Society, and exhibited a design showing a hammer, prospecting pick and ladle, crossed, together with the letters M M S A, all in gold, imposed upon a cross-section of wire rope, whereof the wires are silver and the core is blue enamel. The committee agreed in recommending the design submitted. It was voted unanimously that the design submitted by the committee be adopted as the official emblem of the Society.

The Secretary stated that under the present rules the New York section holds its monthly meetings during the week in which falls the 15th of the month. Experience has shown that this leaves too short a time to obtain the reports of the meeting and publish them in the next following bulletin, which it is aimed to bring out promptly on the 1st of the month. The present arrangement entails great difficulty upon the Secretary and leads to the consequences of bad editing and inadequate reporting. The proceedings of the meetings of all sections ought to be published in the next following bulletin and the latter should be in the hands of all members before the next meeting. This practical consideration indicates that all sections should have their meetings at about the same time. It is recommended that the council adopt a rule providing that all local sections shall hold their monthly meetings not earlier than the 7th and not later than the

13th of the month, the day of meeting being optional within these limits.

The Secretary reported that the letter-ballot ordered upon the recommendations of the executive committee that were reported at the meeting of the council, May 5, 1911, had resulted as follows:

1. Upon adoption of report of executive committee on amendments to constitution and by-laws as submitted in the minutes of council meeting, May 5.

Argall, Chance, Channing, Garrison, Goodale, Ingalls, Lawrence, Pratt, Richards and Winchell voted in the affirmative. Christy voted in the negative.

2. Upon approval of the language of the amendments to the constitution and by-laws, submitted in the draft accompanying letter of the Secretary under date of May 17.

Argall, Chance, Channing, Garrison, Goodale, Ingalls, Lawrence, Pratt, Richards and Winchell voted in the affirmative. Christy voted in the negative.

3. Upon approval of the proposed rules governing resolutions, accompanying letter of Secretary under date of May 17.

Argall, Chance, Channing, Garrison, Goodale, Ingalls, Lawrence, Pratt, Richards and Winchell voted in the affirmative. Christy voted in the negative.

4. Upon approval of the proposed rules governing local sections, accompanying letter of Secretary under date of May 17.

Argall, Chance, Channing, Garrison, Goodale, Ingalls, Lawrence, Pratt, Richards and Winchell voted in the affirmative. Christy voted in the negative.

The Secretary presented the ballots upon the above matter, which ballots were checked and verified by the President, who then announced that 10 members of the council, constituting a majority thereof, had voted in the affirmative upon all questions submitted and consequently declared the respective motions to have been carried.

The report of the executive committee, thus adopted, having been printed in bulletin No. 36, pp. 77-80, and the proposed amendments to constitution and by-laws having to be printed in bulletin No. 37, special entry of these upon the minutes of the council is unnecessary. The rules governing resolutions and local sections, adopted as above, are as follows:



## MINING AND METALLURGICAL SOCIETY OF AMERICA

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### *Rules Governing Resolutions.*

1. Resolutions upon matters of interest to the Society, or upon matters that it is desired to submit to the entire membership of the Society, other than amendments to the constitution and by-laws, may be introduced at any meeting of any local section. Upon adoption by such section, the secretary of the section shall communicate the resolution as adopted to the secretary of the Society, who shall promptly lay it before the council. The council, after consideration of such resolution, shall (1) submit it to the membership of the Society for vote by letter-ballot as provided in the by-laws; or (2) make such amendment as in the opinion of the council is desirable, without, however, altering the intention of the resolution, and then shall submit it to vote by the Society; or (3) reject the resolution and return it to the section that communicated it, with the reason for rejection.

2. A local section when notified by the council of the rejection of a resolution may reiterate that resolution; and upon receipt by the council of report of such action, the council shall then promptly submit the resolution to the membership of the Society, without amendment, but the council may accompany the resolution with a memorandum respecting its own action in the case.

3. If the council receives resolutions bearing upon the same subject from two or more local sections, the council shall select for submission to the Society that which in its opinion is the most adequate for the purpose intended; or the council may frame a composite resolution, to which new matter may be added, and shall submit such resolution to the membership of the Society as a resolution proposed by the council in lieu of those adopted by two or more local sections.

4. Any seven members of the Society, not affiliated with any local section, may unite in presenting a resolution to the council, and the council shall act upon such a presentation in the same way as provided under rule 1.

5. The council itself may initiate a resolution and submit it directly to the membership of the Society for letter-ballot.

### *Rules Governing Local Sections.*

1. Local sections of the Society may be formed for promoting social intercourse among members, and for reading papers, and discussing subjects pertinent to the objects of the Society,

and not inconsistent with the constitution and by-laws of the Society.

2. Such sections may be organized wherever there be 15 members in any city or town, or in places adjacent thereto, upon the request of 10 or more of such members addressed to a councillor, who may thereupon call a meeting of members residing within the limits of the proposed section, and if not less than seven members attend such meeting, they may thereupon organize such section, elect officers, comprising at least a chairman and a secretary, and adopt rules and regulations for their local government, not inconsistent with the constitution and by-laws of the Society; provided that said rules and regulations, or any subsequent amendment thereof, shall forthwith be submitted to the council of the Society, and shall not become effective until approved by the council; and provided, that all members of the Society residing or engaged professionally in the district included by any section shall be invited to become members of said section; and provided that any such member, upon application and upon complying with the rules and regulations of said section, shall be admitted to membership therein; and provided that all expenses incurred by said section, except as noted below, shall be defrayed by said section.

3. The secretary of each local section shall notify the secretary of the Society as to the names of members enrolled in his section and shall promptly inform the secretary of the Society respecting any resignations from or additions to membership. In the event of any dispute as to membership, or the right to enroll members, the matter shall be referred to the council of the Society, whose decision shall be final.

4. The Society will pay, on request, two-thirds of the actual cost of stenographic reports of the meetings of any section, provided that the amount so paid does not exceed one-half the dues paid into the general treasury by the members of such section, nor exceed \$100 in any one year.

5. Dues or assessments for the defrayment of the expenses of local sections shall be levied as each section shall determine, but shall not exceed \$5 per member in any one year. The failure of any member to pay such section-charges shall be reported to the council of the Society and delinquency for more than one year after notice has been served shall be a reason sufficient for the suspension or termination of the membership in the Society of such delinquent member. Any member not in arrears in payment of section-charges may terminate his connection with any

section by written notification to the secretary thereof. If by resignation, or otherwise, the membership of any local section shall fall below 15, the existence of such section may be terminated by the council.

6. The proceedings of local sections, including papers and discussions, shall be reported to the secretary as hereinafter provided. No section shall, without the approval of the council of the Society, permit any account of its proceedings or of its papers or discussion to be printed in any newspaper or technical publication, nor shall any such section print or publish any proceedings, without the assent and approval of said council, nor issue any printed matter, except the necessary notices, etc., relating to the management of the section. No section shall at any time perform any act or deed which is properly a function of the Society.

7. The geographical limits of each local section shall be subject to such amendment or limitation as the council of the Society may from time to time determine.

8. All members of the Society shall have the right to attend all meetings of all sections.

9. Honorary members of the Society shall be exempt from dues to any local section.

10. The order of business at meetings of local sections shall be:

- a. Reading of minutes of previous meeting.
- b. Transaction of business.
- c. Discussion of professional and technical questions.

11. The proceedings at each meeting of each section shall be promptly reported by the section-secretary to the secretary of the Society.

The Secretary reported that the rules governing local sections had met with strenuous opposition on the part of Professor Christy, and other San Francisco members of the Society, especially the rule providing that no section shall, without the approval of the council, permit any account of its proceedings to be printed or published without the approval of the council, and that no section shall at any time perform any act or deed which is properly a function of the Society. The specific question is: Shall local sections under any circumstances be permitted to act independently of the whole Society, or shall they not? The broad question involved in the matter is the unity of



the Society. Shall local sections obey rules and regulations adopted by majority vote of the council, or shall they be more or less independent?

In the discussion of the above matter the expression was unanimous that it is essential to the welfare of the Society to adhere to the position that has steadily been held by the council during the history of the Society.

## MEETING OF THE SOCIETY.

A meeting of the Society was held at the Engineers' Club, New York, on June 15, at 8.30 p. m. The meeting was called to order by J. Parke Channing, who stated that it was a special business meeting of which due notice had previously been given.

The members present were Messrs. P. R. Bradley, Chance, Channing, Conner, Garrison, Hutchinson, Ingalls, Knox, Lawrence, Parsons, Rice, Richards, Spilsbury, Stone, Townsend and Washington. Total, 16. The Secretary reported that he held 12 proxies made out in his name, and 7 in the name of J. Parke Channing, 2 in the name of George C. Stone, 1 in the name of F. W. Parsons, and 2 in the name of H. M. Chance. Total, represented by proxy, 24. Total present in person and by proxy, 40, this constituting a quorum.

The minutes of the previous meeting of the Society were approved, without reading, as printed in a former bulletin of the Society.

The President stated that the present meeting had been called to act upon amendments to the constitution and by-laws, recommended by the executive committee and approved by the council, which had taken a letter-ballot upon the matter. The President read the report of the executive committee, printed in bulletin No. 36, and requested the Secretary to introduce the amendments, article by article.

The Secretary said that the council had aimed to make but few changes. The constitution and by-laws had well stood the test of three years and it is undesirable to tinker with them unnecessarily. The most radical defect had been the provision requiring that all resolutions, except for the amendment of the by-laws, must take the course prescribed for amendments to the constitution. Experience had shown it to be a matter of upward of six months to put anything through. While it is manifestly proper that amendments to the constitution be required

to pass through a prolonged course, the same system when applied to all actions of the Society tends to defeat its purpose. The council has decided, furthermore, that it would be advisable to alter the method of electing officers of the Society, and had drafted amendments extending to their election the same system of a direct primary and general vote as has worked so well in the election of councillors. The other amendments to be introduced were simply to perfect a few working details. While the several amendments will seem, perhaps, to be voluminous and complex, this is because two points, viz., the election of officers and organization of the council, are interwoven through a series of by-laws. In fact the proposed amendments are very simple.

In behalf of the council the Secretary moved to cancel article 5 of the constitution and substitute the following:

"The affairs of the Society, subject to the provisions of the constitution and by-laws, shall be managed by a council of fifteen members, who shall hold office for the prescribed term or terms. The executive officers of the Society shall be a president, a vice-president, and a secretary (who shall also be treasurer), which officers shall be members of the council ex-officio, and shall hold office for one year, or until the close of the meeting at which their successors in office are elected, except that the secretary shall hold office until his successor accepts transfer of the duties of that office. Additional officers may be elected by the council from time to time if necessary for the purposes of the Society. All officers shall be eligible for re-election. Vacancy in the office of president shall be filled by the vice-president, who shall then become president, and the council shall forthwith elect a vice-president; and if necessary shall elect a member of council, of which the number must always be fifteen."

This motion, having been seconded by Mr. Rice, was carried unanimously.

The Secretary moved to amend article 1 of the by-laws by inserting after the word "Society," in the nineteenth line, the following clause: "And with the approval of the committee the secretary of the Society shall then submit the name of the candidate to the whole council."

The Secretary explained that this amendment was to correct a manifest omission in the by-laws, and make the latter conform to the intention and practice in the election of members.

This motion was seconded by Mr. Washington and was carried unanimously.

The Secretary moved to amend article 3 of the by-laws by

adding the sentence: "The membership of any person shall date from the day of his election."

The Secretary explained that the purpose of this amendment is simply to specify the time from which membership shall date, as to which there is no specification in the present by-laws. Such a specification is desirable in order to prevent possible dispute.

The motion, having been seconded by Mr. Spilsbury, was carried unanimously.

The Secretary moved to amend article 5 of the by-laws by inserting the following sentence: "Persons elected after nine months of any year have expired, shall pay only one-half of the dues for that year. The council may, for sufficient cause, remit the whole or part of dues in arrears."

This motion was seconded by Dr. Chance and was carried unanimously.

The Secretary stated that an amendment to this by-law recently adopted by the Society was troublesome and injudicious, referring to the procedure in the case of members delinquent for dues. In practice it involves the notification of delinquent members by registered mail, the obtaining of their acknowledgment of the notice, and the entry of the matter on the minutes of the Society.

Dr. Chance moved further to amend by-law 3 by striking out the words "after he shall have received notice of his delinquency" and substituting "but may reinstate such member at its discretion."

This motion, having been seconded by Mr. Knox, was carried unanimously.

The Secretary moved to amend articles 8, 9, 10, 11 and 12 of the by-laws by substituting the following:

"8. The council shall from time to time divide the territory occupied by the membership into twelve geographical districts to be designated by numbers. Each of the districts shall be, as nearly as practicable, contiguous territory; and each shall contain as nearly as practicable an equal number of members. The council shall announce such division to the Society three months before the annual meeting. There shall be at any one time not less than fifteen councillors, three of whom shall be ex-officio, elected annually, and one from each of the twelve districts, whose term of office shall be so arranged that four of them shall retire each year."



"9. The officers of the Society, as provided in the constitution, shall be elected as hereinafter provided, except that whenever a vacancy occurs it shall be filled by a majority vote of the council. Their respective terms of office shall begin at the close of the meeting at which they are elected. For reasons of weight any office may be declared vacant by a two-thirds vote of the council. The duties of the several officers shall be such as usually attach to the office, or such as may be determined by the council. The council may delegate its powers to persons or committees, and may make such rules and regulations as may be necessary for the proper conduct of the business of the Society, provided that these are in harmony with the constitution and by-laws."

"10. The council shall consist of the president, vice-president and secretary ex-officio, and twelve members elected as hereinafter provided. The term of office of a councillor shall begin immediately upon election. Vacancies occurring at any time in the council may be filled until the next annual election by a majority vote of the remaining members. At the next annual election new councillors shall be elected to fill such vacancies for the unexpired term of office only."

"11. Three months before the annual meeting, the secretary shall send a nomination ballot to each member of the Society in the districts for which new councillors must be elected, with the request that he shall nominate three members, in such manner as the council may direct, as candidates for councillor to represent his district; and shall send a nomination ballot to each member of the Society entitled to vote, with the request that he shall nominate one member for president, one for vice-president and one for secretary. Nominations shall be received for twenty days, when the polls shall be closed. Sixty days before the annual meeting the secretary shall prepare a ballot, containing in and for each of these districts not less than three names, and for the offices of president, vice-president and secretary, each, not less than three names, which shall be in each case those receiving the largest number of nominating votes before the closing of the polls. This ballot shall be mailed to each member of the Society entitled to vote, who may vote for one councillor in each district, having the right to substitute names not on the list, and to cast not over three votes for a single candidate, provided that the total number of votes cast by such member shall not exceed the total number of vacancies to be filled; and who may cast one vote for president, vice-president and secretary, respectively, having the right to substitute names not on the list. The ballot shall be signed, sealed and voted as prescribed in by-law 16."

"12. At noon of the first day of the annual meeting the polls shall be closed and the ballots counted by two tellers appointed by the president. Councillors shall not be eligible for such appointment. The candidate for councillor in each district, and the candidate for the respective elective offices, receiving the largest number of votes, shall be elected. In case of a tie the president shall cast the deciding vote."

The motion was seconded by Mr. Rice. Dr. Chance, seconded by Mr. Spilsbury, moved to amend by striking out the provisions permitting cumulative voting. This amendment, upon vote, was lost. Mr. Spilsbury moved to strike out the sentence, "For reasons of weight any office may be declared vacant by a two-thirds vote of the council" in by-law 9, and this motion, having been duly seconded, was carried. Upon motions, duly seconded, the phraseology of the last sentence of by-law 8 was altered to read as follows: "The council shall consist of the president, the vice-president and the secretary; and of twelve members, elected one from each district, and the terms of office of such twelve councillors shall be arranged so that four of them shall expire each year." The first sentence of by-law 10 was omitted, as an unnecessary repetition.

Question was then put upon the original motion as amended and it was carried.

The Secretary moved to amend article 13 of the by-laws by cancelling the sentence, "Five councillors shall constitute a quorum," and substituting, "Five councillors, present in person or by proxy, shall constitute a quorum." Also by adding the following: "Whenever a letter-ballot of the council be taken a majority vote of the council shall be required to pass the motion put to ballot."

The Secretary explained that in the working of the Society the custom has developed of referring important matters to the whole council for letter-ballot, but the present by-laws make no provision governing such ballots. In council meetings no provision is specifically made for representation by proxy, although such provision is made in the case of meetings of the Society. It is difficult to obtain a quorum at meetings of council and inasmuch as those meetings have come to be to a large extent simply a means for the recording of proceedings it is desirable that representation by proxy be authorized.

This motion, having been seconded by Mr. Stone, was carried.

The Secretary moved to amend article 14 of by-laws by cancelling the last two sentences and substituting the following:

"Resolutions endorsing or condemning matters of public or professional interest shall take such course as may be prescribed by the council in duly formulated rules, but such rules must provide that not less than thirty days be allowed for any ballot of the membership of the Society."

The Secretary explained that this amendment cancelled the present provision that resolutions endorsing or condemning matters of public or professional interest shall take the course prescribed for amendments to constitution.

This motion, having been seconded by Mr. Hutchinson, was carried.

The Secretary moved to amend article 16 of the by-laws by striking out the last two lines. The sentence to be altered is in the article relating to sealed letter-ballots, and at present reads as follows: "The result of the ballot shall be communicated to the members of the Society at such time and in such manner as the council shall determine and shall be announced by the presiding officer at the next business meeting of the Society and recorded on the minutes." The words to be cancelled are those which follow "determine." It is proposed to cancel them as unnecessary, the business meetings of the Society being few and all announcements being made practically in the bulletin of the Society.

This motion, having been seconded by Mr. Garrison, was carried.

The Secretary moved to amend article 17 of the by-laws by cancelling the second sentence and substituting the following: "Such vote must be inaugurated within fifteen days after a motion for a vote of confidence has been passed; and the majority of votes received within fifteen days after issuance of the ballot shall decide."

This motion, having been seconded by Mr. Garrison, was carried.

The President announced that a second meeting of the Society, as constitutionally required, will be held in New York on July 31.

There being no further business the meeting was adjourned.

W. R. INGALLS, *Secretary*.



## MEETINGS OF SECTIONS.

### NEW YORK.

The meeting of the New York section scheduled for June 15 was called to order by Mr. E. G. Spilsbury, vice-chairman, following the adjournment of the meeting of the Society. Owing to the lateness of the hour, the meeting of the New York section was adjourned immediately.

## COMMUNICATIONS.

### PREVENTION OF MINE ACCIDENTS.

**George E. Collins.**—Judging from the reports of the discussions by the New York and Philadelphia sections of the Society, which have reached us, the general opinion is that many of the provisions of the original draft are not quite specific enough, and the changes suggested are largely in the direction of adding further and more detailed regulations. Unfortunately, most of the discussion has been contributed, and most of the suggestions made, by men who regard the draft of the law from the standpoint of the larger mines. But the small mines are vastly more numerous, and the aggregate number of men employed in them is probably greater. Furthermore, it is the smaller mines that are in greatest need of regulation by law, for the men in charge of them are frequently less capable and less well informed. As the smaller mines are usually run with very little organization, and are frequently short-lived, the code of regulations that is proposed is, in my judgment, too elaborate rather than not elaborate enough; there is grave danger of introducing a great many provisions that, for such mines, are unnecessary or even impossible. Such for instance, is the proposal that every magazine for the storage of explosives must be placed "not less than 300 feet distant from any shaft, adit, habitation, public highway, public railway, or from the boundary line of any mining property." In some of the mining districts of Colorado, this provision could be complied with only by placing magazines at a very great distance from the mines which would have to derive their daily supply from them, an inconvenience which would not merely ensure frequent non-compliance with the law, but if complied with would introduce a new set of dangers in transporting the explosives to the mines. Another instance which comes to my mind is the proposal of Mr. Spilsbury that no quantity of explosives in excess of 50 lb. should ever be allowed underground in one place. Usually, this provision would work no hardship, but

how about such a case as the Newhouse Tunnel, where in tough ground the average consumption of 40% gelatine-dynamite for every round of holes was 100 lb., and where for months together we used at the rate of three tons of explosives monthly. Again, a proposed rule reads, "No candle shall be left burning in a mine or any part of a mine when the person using the candle departs from his work for the day." This rule is obviously intended to reduce the danger of fire in orebodies timbered with square sets, around shaft stations and elsewhere where there are dry timbers, and in such places is an admirable precaution. But as the rule is drafted, it would forbid a miner, in the ordinary fissure-vein mine where there is nothing inflammable and no possibility of fire, from leaving a succession of lighted candle-snuffs along the walls to safeguard his exit from a raise, stope, or drift, after lighting his fuses, in case his candle should go out. I need hardly point out that this is really an excellent practice, against which no objection can reasonably be raised.

These are merely special cases, but they serve to illustrate the danger, in drawing up a set of regulations with the object of covering every possible source of accident, of overlooking conditions under which some particular regulation would be absurd. I think it will be found impossible, however carefully the rules are scrutinized beforehand, to avoid some such instances of inapplicability to special conditions. The harm done, however, will not be mainly the hardship itself, but the disrespect for the law which will certainly follow. The average mine operator, when he finds something in the law which those who originally drafted it failed to foresee and provide against, is apt to jump to the conclusion that the lawmaker was ignorant—not merely of his special local conditions, but of "practical" mining altogether, his own local conditions being all of mining he himself knows about. As I have personally observed, this feeling frequently results in disregard, not merely of the particular inapplicable portion, but of the entire body of the law.

Is it not a fallacy to suppose that the greater part of the loss of life in mining accidents is due to imperfect laws—or even to failure to enforce the laws we already have. Judging from my own experience, I should say that over one-half, probably three-quarters, of the mining accidents I have known could not have been avoided by the adoption and enforcement of the proposed code, or any other practicable code of mining laws. Remembering as I do something of mining conditions in England, and comparing them with those we have in Colorado, I should say that the essential difference, to which the higher accident rate here is due, is not so much a matter of laws as of discipline.

From this point of view, I am strongly of the opinion that the qualifications for the positions of mine superintendent and mine foreman, for mines employing over a specified minimum number of men, should be increased, especially in respect to age and experience. I believe that, as it is practically impossible to penalize the working miner for disobedience to laws and rules made for his protection (more's the pity) nothing else will do so much for the development of a better discipline in mines, and a greater respect for the authority of those in charge, as a legal qualification of knowledge and experience for the latter. In my opinion this will do more to lessen the accident rate than all the detailed rules that can be framed.

Passing now to the detailed provisions, section by section, I suggest the amendments noted below, in addition to those which I have suggested previously :

Sec. 8, line 22, p. 361. Before "inrush" insert "unexpected."

Sec. 11. In Colorado, it would be utterly impossible for the inspectors to visit every mine at least once a year, unless the number of inspectors be increased to a degree which the Legislature would never provide for financially. What is needed, even more than frequent inspection, is the provision of remuneration for inspectors sufficient to attract and keep first-class men.

Sec. 15, line 2. Insert "Signed by three or more persons employed in a mine, if less than twenty-five persons are employed therein; or by five or more persons employed in a mine, if more than twenty-five and less than one hundred persons are employed therein; or by ten or more persons employed in a mine, if more than one hundred persons are employed therein."

Mr. Sharpless' criticism (Bulletin 29, p. 423) evidently does not take into consideration very small mines.

Sec. 15, line 4. For "and" read "or."

Sec. 15, p. 366, line 1. For "and" read "or."

Sec. 24, line 4. After the second time, the word "building" occurs, insert "Shaft, tunnel, or other mine opening."

Sec. 25, line 1. Omit "containing nitro-glycerine."

Sec. 25, line 13. "Or from the boundary line of any mining property." This would be impracticable in such a region as Gilpin county. See also Mr. Leggett's suggestion, p. 420, which is also impracticable.



Sec. 25, p. 371, line 13. After "depth" insert "if possible."

Criticising section 25 as a whole, I think it would be better frankly to provide for storage and thawing chambers for limited quantities of explosives underground, under proper restrictions. (See the instance reported by C. A. Chase, Bulletin No. 29, bottom of page 405.) A disused prospecting adit is often the very best place for a storage magazine if care is taken to see that the gases from possible explosion will not penetrate into workings where men are employed.

Sec. 26. At end add "and its strength." Also I think the dating of fuse and caps, particularly the former, is far more important than that of explosives. Fuse deteriorates, in dry districts, because of the cracking of the gutta-percha covering, and in damp districts, because of its gathering moisture. The result, in irregularly delaying the burning time, is fully as dangerous as any deterioration in explosives. I doubt whether ordinary gelatine dynamite deteriorates with keeping for a year or so, in cold dry climates at least. I know that the best qualities of gutta percha fuse do deteriorate.

Secs. 27 and 28. A mine superintendent should be at least 25 years of age, and have had not less than three years' experience in connection with the administration of mines, or have graduated at some recognized engineering school; a mine foreman should be at least 25 years of age, and have had at least five years' practical experience underground in metalliferous mines.

Sec. 29, lines 9 and 10. This is impracticable. Work in unsafe places is sometimes necessary and unavoidable: as for instance, raising to tap old workings full of water. In such cases all that should be required is to ensure that no practicable precaution is neglected. In my experience, work in such "unsafe" places does not result in accidents very often, because the men are careful and amenable to discipline.

Sec. 30, lines 1 and 2. I emphatically disagree with this provision. The more we can make each individual miner responsible for his own work, the better. The organization of mines should be directed to develop the intelligence and capacity of the miner, and leave as little as possible to gang-bosses.

Sec. 30, line 15. For "thirty" read "twenty." The former, with decent fuse, is quite unnecessary.

Sec. 30, line 17. After "Foreman" insert "or."

Sec. 30, line 20. For "mine" read "place."

Sec. 30, lines 34 and 35. It is impossible and unnecessary to forbid the extraction of explosives from a missed hole; all that is required is to forbid the extraction of the primer cartridge.

Sec. 31, p. 374, line 6. After "and" insert "excepting in case of emergency."

Sec. 32, Rule 7, line 2. For "on the hoisting cage" read "being hoisted."

Sec. 33. I incline to think that it would be well to insist on a specified minimum ratio of sheave to rope diameter.

Sec. 34, last 7 lines on page 376. This provision should be omitted until such time as safety catches are perfected.

Sec. 35, line 6. Omit the words "under oath of the persons making such examination." The presentation to the mining inspector of the customary certificate from a recognized Boiler Inspection Company's inspector, or from a State Boiler Inspector, should be sufficient.

Sec. 36. At end, add "or of boys over the age of 12 and under that of 16 for ore-sorting in sorting-houses at surface."

Sec. 37, Rule 5, line 1. After "burning" insert "adjacent to timbers or other inflammable material, unless protected by a scone."

Rule 6. I very much doubt whether this should apply to narrow fissure-vein mines, especially when wet, as fires are not to be feared in them.

Rule 7. I hope the committee will modify this rule so as to make it clear that the giving of signals is not confined to the station-tender, where such a person is employed. Such a rule would be absolutely unworkable and even dangerous in small mines.

Rule 11. Adopt the Colorado provision for chain ladders or other means of escape from shafts.

Rule 14. Change to read "Only safety hooks shall be used with a bucket in hoisting." One form of open hook, used with a chain containing a link with a flattened place on one side, is really a very satisfactory safety-hook.

Rule 15, line 1. Change to read "All vertical shafts."

Rule 23, line 1. Omit the words "or entry to a mine."

Rule 31. After "two hundred and fifty volts" insert "alternating or five hundred volts direct current." From my experience, I am inclined to think that 500-volt direct current is no more dangerous than 250-volt alternating.

Rule 33, line 3. After "drive" add "when in the immediate vicinity of such working."

Rule 37. This should not apply to ladderways in a raise while under construction, when it is often best to spike the ladders directly to the timbers, where they are least likely to be broken by falling rocks.

Rule 38, line 1. After "All" insert "such."

Rule 40, line 1. Before "depth" insert "total."

Rule 45. Change to read "All sumps shall be securely covered except when water is being hoisted from them."

Rule 47, line 1. Before "rope" insert "hoisting." In line 4, for "twelve" read "four."

Rule 55, line 1. Before "rope" insert "hoisting."

Rule 56. A "separate building" is hardly necessary. Read "a separate place."

Rule 57. This should be modified to permit of thawing by the aid of fresh manure, and perhaps by electric current, if the wiring is carefully installed.

Rule 60. After "working in any mine" add "unless such dynamite (better "explosive") is to be thawed by him."

Rule 62. After "shall not be" insert "stored in the same place."

Sec. 39, line 1. After "established" add "by mutual arrangement."

Sec. 39, p. 389, line 16. Omit the words "it shall be the duty of each operator \* \* \* once in every 24 hours." In many cases, and particularly where there are many such outlets, this would be unduly onerous and quite unnecessary.

Sec. 44. This should apply only to mines deeper than 500 ft. Better make this entire section discretionary with the mine inspector.



Sec. 45. I urge the committee to reconsider this section, and also Sec. 30, in the light of Mr. Chase's remarks (see Bulletin 29, page 405), with which I emphatically concur.

With reference to the provision that every mine must establish a wash-house for the benefit of its miners, the words "if practicable" should be inserted. I have recently been much impressed with the difficulty of obtaining a sufficient supply of water for such a purpose at high altitudes, where it is difficult enough to get even the water that is necessary for drinking and cooking purposes. No doubt, the same consideration applies to some of the desert mines.

## OBITUARY.

**Linton B. Sutton**, one of the well known mining engineers of this country, died in New York, after a prolonged illness, on June 11. He was born at East Liverpool, Ohio, September 16, 1866, and was graduated from the Michigan College of Mines in 1889, returning, however, for a post-graduate course, which he completed in 1890. For the next nine years his chief work was in the iron country, saye for an outside engagement as mining engineer for the Tremont Gold Mining and Milling Company. In the iron country he was employed as mining engineer and chemist by the Volunteer Iron Company, and later as mining engineer for the Chapin Iron Company. In connection with these companies he gained an important experience in mining on a large scale, including the various applications of the caving system, and achieved a noteworthy esteem as an engineer capable of handling difficult problems and as a thoroughly competent mine manager. This led to his being invited by Thomas H. Leggett to join him in the Transvaal, whither Mr. Sutton proceeded in 1899, taking a place on the engineering staff of S. Neumann & Co. This being the time of war in the Transvaal, when mining at Johannesburg was suspended, Mr. Sutton's first commission was to examine copper deposits in Namaqualand. Completing that work he went to Johannesburg, toward the end of the war, and in course of time became general manager of the Randfontein Deep, Ltd. Upon retiring from that position he was engaged in an important gold-mining investigation in Madagascar, after which he returned to Johannesburg, to become assistant consulting engineer, under Fred Hellmann, for the East Rand Proprietary Mines, and for a brief period was acting consulting engineer for that company.

Mr. Sutton returned to the United States in 1907 and entered into general mining practice, but in March, 1909, became assistant to Pope Yeatman, consulting engineer for the Guggenheim Ex-

ploration Company, and under him was connected with the development of the Nevada Consolidated, Copper River, Esperanza and other important mining enterprises. In 1910 Mr. Sutton was promoted to the position of consulting engineer for the Esperanza Mining Company, which position he held at the time of his death. During the last six months, and more, Mr. Sutton had been in poor health, and for several weeks had been unable to be active in his work.

Mr. Sutton was a thoroughly lovable man and warmly appreciated in his profession, in which he had many admirers and dear friends. He was distinguished for his modesty, which failed, however, to cloak his professional attainments that were of a high order. Loyal, sincere, unassuming, his untimely death is a real loss to the engineering profession. He was a type of all that is best in mining engineering and its profession.

Mr. Sutton was elected a member of the Mining and Metallurgical Society in 1911.

### PERSONALS.

Philip Argall has gone to Alaska.

F. W. Bradley, of San Francisco, has gone to Alaska, where he will remain for three or four months, making his annual inspection.

John M. Boutwell, consulting geologist for Phelps, Dodge & Co., is making a geological survey of the property of the Moctezuma Copper Company at Pilares de Nacozari, Sonora, Mexico.

Dr. J. A. Holmes, director of the Bureau of Mines, delivered an address on "The Individual, the State and the Nation in the Development of our Mineral Resources," at the 40th annual commencement of the Missouri School of Mines on May 26.

Prof. Louis D. Huntoon, who has just retired from the chair of mining and metallurgy at Yale, will open an office as consulting engineer at 42 Broadway, New York.

Dr. Andrew C. Lawson, of the University of California, has been engaged by the Canadian Geological Survey to make an examination of the Lake Superior region during this summer.

Dr. Robert H. Richards, head of the department of mining and metallurgy at the Massachusetts Institute of Technology, has been elected an honorary member of the American Institute of Mining Engineers.

Geo. S. Rice, mining engineer, on the staff of the U. S. Bureau of Mines, sailed for Europe on June 17 with a small party of engineers who are being sent by operators in the anthracite coalfield and in the soft coalfield to study European practice.

Pope Yeatman is returning from Chile, via Europe, and is expected in New York toward the end of July.

### CHANGES OF ADDRESSES.

Beeler, H. C. . . . . 1004 First National Bank Bldg., Denver, Colo.  
Huntoon, Louis D. . . . . 42 Broadway, New York, N. Y.

### MEMBERS ELECTED IN JUNE, 1911.

Benjamin, Edward H. . . . . 75 Fremont St., San Francisco, Cal.  
President, Joshua Hendy Iron Works.

Cates, Louis Shattuck. . . . . Ray, Ariz.  
Superintendent of Mines, Ray Consolidated Copper  
Company.

Haas, Frank. . . . . Fairmont, W. Va.  
Consulting Engineer, Consolidation Coal Company.

Jopling, James Edmund. . . . . 321 Cedar St., Marquette, Mich.  
Chief Engineer, The Cleveland-Cliffs Iron Company.

Queneau, Augustin Leon Jean. 929 Chestnut St., Philadelphia, Pa.  
Consulting Engineer, Wetherill Finished Castings Company.

Symmes, Whitman. . . . . Virginia City, Nev.  
Superintendent, United Comstock Pumping Association,  
Mexican Gold and Silver Mining Company, etc.

Young, George J. . . . . 737 Center St., Reno, Nev.  
Professor of Mining and Metallurgy, Mackay School  
of Mines, University of Nevada.





# Mining and Metallurgical Society of America

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Vol. IV

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No. 7

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## ANNOUNCEMENTS.

**Ballot of May 15, 1911.**—Under date of May 15 members of the Society who had not already voted were requested to vote upon questions submitted originally under date of March 1. The second ballot was canvassed on July 17 by tellers, who made the following report:

J. Parke Channing,  
*President.*

Sir:

We beg to report that we have this day canvassed the second ballot upon questions originally submitted to vote of the membership on March 1, 1911.

Ballots were received to the number of 62, of which one was rejected because of being unsigned.

Upon question No. 2 there were 59 votes, of which 33 were in the affirmative and 26 in the negative.

Upon question No. 3 there were 61 votes, of which 56 were in the affirmative and five in the negative.

The result of the first ballot having been 58 in the affirmative and 26 in the negative upon question No. 2; and 81 in the affirmative and one in the negative upon question No. 3; the combined vote of both ballots was as follows:

Upon question No. 2 there were 91 in the affirmative and 52 in the negative.

Upon question No. 3 there were 137 in the affirmative and six in the negative.

The number of members eligible to vote was 195.

E. G. SPILSBURY,  
A. R. TOWNSEND,  
*Tellers.*

July 17, 1911.

It appears from the report of the tellers that question No. 2, which was a resolution that the Society shall award a gold medal to the person who, in its opinion, has done most during the previous year to advance the arts of mining and metallurgical engineering, failed to secure the affirmation of a majority of the membership eligible to vote, but on the other hand, the negative vote was insufficient to defeat the resolution. In the constitution it is provided that members who have failed to vote upon closing of a second ballot shall be recorded in the affirmative, but owing to a technical error in the issuance of the second ballots, of which I have been informed, I declare no vote upon this question, and direct that it be resubmitted to those members who have not yet voted upon it.

Upon question No. 3, viz., "Resolved that in the opinion of the Mining and Metallurgical Society of America, State inspectors of mines should be appointed and should not be elected," a decisive vote was recorded in the affirmative, and more than a majority of the membership of the Society eligible to vote having been recorded in the affirmative, I consider it reasonable to waive, in this case, the technical error in the issuance of the second ballots, and I hereby declare this resolution to have been carried and to be the formal action of the Mining and Metallurgical Society of America.

J. PARKE CHANNING,  
*President.*

July 18, 1911.

**Bound Volumes.**—Provision has been made to supply every member of the Society with a complete set of the Bulletins of the current year. These will be sewed together but unbound. Volumes bound uniformly in half morocco will be supplied for \$1.25 per volume. Members desiring bound volumes are requested to notify the secretary promptly, at the same time remitting \$1.25, in order that the contract for binding may be placed immediately after the end of the year.

**Committees.**—The Secretary recently addressed a letter to members of the council, of which the following is an abstract:

"It seems to me that a great deal of the practical work of the Mining and Metallurgical Society must be done through the appointment of committees to consider special matters of first-class importance. We have already appointed a committee to consider and report upon the subject of professional training, covering the broad features of school education and subsequent apprenticeship in practice. This is an important and practical matter.



"We may also advisably appoint a committee on professional ethics to take up the report on that subject that has already been made by the Philadelphia section; also a committee on mining laws to consider what stand our Society ought to take in the movement to amend the present mining laws of this country and give some impetus to that movement; also a committee on standardization of practice, to consider the reports upon such matters that have been made by other societies, especially the Institution of Mining and Metallurgy, and recommend what of them may be usefully adopted by the Mining and Metallurgical Society."

Replies from the members of the council were unanimously favorable to this suggestion. Mr. H. V. Winchell wrote as follows:

"The suggestions made in your communication of June 28 relative to the appointment of a special committee for the consideration of matters of importance appeals to me and meets with my entire approval. In conversation only a day or two since with one of the members of the Society, I expressed the opinion that the work of the Society had up to date borne fruit chiefly through the operations of such committees, and that in the future important results might be expected from continuance of such a policy. I am particularly interested in the proposal to amend the present mining law of the United States, and would be glad to co-operate with other members of the Society in promulgating information which would tend to show that this law is not favored by the majority of mining men who are well informed, and that it leads only to litigation and expense.

"I should be glad to join in the work of the committee to use the influence of the Society as effectively and intelligently as possible in bringing about a substitution of a sensible and up to date mining law.

"The questions of professional ethics and of standardization of practice are also subjects which members of our Society should be particularly qualified to discuss, and in which their suggestions should carry weight."

This matter was brought before the executive committee at its meeting on July 11, at which it was voted that the president be instructed to appoint standing committees, each to consist of three members, on Professional Ethics, Mining Laws, and Standardization.

**M. M. S. A. and A. I. M. E.**—At a meeting of the council of the Mining and Metallurgical Society on June 15, the following resolution was adopted: "That it is the sense of this council meeting that the council of the M. M. S. A. is ready to receive through its executive committee suggestions from the council of the A. I. M. E. looking toward affiliation of the two societies." The council of the A. I. M. E. having appointed a conference committee of five members, a joint meeting of this committee and the executive committee of the M. M. S. A. was held at the Engineers' Club, July 11, Messrs. Channing, Ingalls, Kirchhoff, Lawrence, Lyman, Rand and Struthers being present. Following an extended discussion, a resolution was unanimously adopted to the effect that some plan of affiliation of the two societies is desirable, each society to preserve its identity and organization. By a further resolution, the presidents and secretaries of the two societies were appointed a sub-committee to develop a plan on the above line to be submitted to the respective societies. At a meeting of this sub-committee it was recommended to the councils of the respective societies that arrangements be made for joint meetings of the two societies whenever possible and that joint meetings of the local sections of the two societies be authorized and advised.

W. R. INGALLS,  
*Secretary.*

### MEETING OF THE SOCIETY.

A special business meeting of the Society was held at the office of the president, on July 31, 1911, to act upon amendments to the constitution and by-laws introduced and passed at the meeting on June 15, 1911. The members present were President Channing and Messrs. Spilsbury and Stone in person, with the proxies of 53 other members, this constituting a quorum.

The minutes of the previous meeting were read and approved

Amendment to Article V of the constitution was adopted unanimously.

The following numbered by-laws were adopted as amended, without discussion: By-laws 1, 3, 5, 8, 9, 10, 11, 12.

By-law 13, on suggestion of the secretary, was further amended by the addition of the words, "except that letter ballots upon candidates for admission to membership shall be decided as provided in by-law 1." This amendment, duly seconded, was adopted and thereupon the amended amendment was passed.

By-laws 14 and 16, as amended, were then passed, being duly seconded.

By-law 17, on suggestion of the secretary, was amended by replacing the number 15 by the number 30, so that the by-law should read, "Such vote must be inaugurated within 15 days after a motion for a vote of confidence has been passed; and the majority of votes received within 30 days after issuance of the ballot shall decide." This amendment, duly seconded, was adopted, and the amended amendment was then passed without further discussion.

The amendments introduced and passed at the meeting on June 15, 1911, passed with further amendments at the meeting on July 31, and now before the membership of the Society for ballot, are as follows:

### *Amendment to Constitution.*

#### ARTICLE 5.

Cancel the present article and substitute the following: "The affairs of the Society, subject to the provisions of the constitution and by-laws, shall be managed by a council of fifteen members, who shall hold office for the prescribed term or terms. The executive officers of the Society shall be a president, a vice-president, and a secretary (who shall also be treasurer), which officers shall be members of the council ex-officio, and shall hold office for one year, or until the close of the meeting at which their successors in office are elected, except that the secretary shall hold office until his successor accepts transfer of the duties of that office. Additional officers may be elected by the council from time to time if necessary for the purposes of the Society. All officers shall be eligible for re-election. Vacancy in the office of president shall be filled by the vice-president, who shall then become president, and the council shall forthwith elect a vice-president; and if necessary shall elect a member of council, of which the number must always be fifteen."

### *Amendments to By-Laws.*

#### I—ADMISSION TO MEMBERSHIP.

The seventh sentence to read as follows: "Thirty days after the mailing of the list, the committee of the council shall consider the communications received from members of the Society, and with the approval of the committee, the secretary of the Society shall then submit the name of the candidate to the whole council for secret letter ballot."



### 3—SUBSCRIPTION TO CONSTITUTION AND BY-LAWS.

Add the following sentence: "The membership of any person shall date from the day of his election."

### 5—ANNUAL DUES AND LIFE MEMBERSHIP.

Substitute the following: "The annual dues shall be ten dollars, payable in advance on the first day of January of each year. Persons elected after nine months of any year have expired shall pay only one-half of the dues for that year. The council may, for sufficient cause, remit the whole or part of dues in arrears. The executive committee of the council may drop from membership any member more than one year in arrears for annual dues, but may reinstate such member at its discretion. The council shall permit any member, not in arrears, to become a life member on payment of a sum deemed adequate for the purpose by the council, and based on his expectation of life according to reliable tables of mortality. Such life membership and initiation fees shall be invested, and the income only shall be applied to the current expenses of the Society."

### 8—ELECTION DISTRICTS.

Substitute the following: "The council shall from time to time divide the territory occupied by the membership into twelve geographical districts to be designated by numbers. Each of the districts shall be, as nearly as practicable, contiguous territory; and each shall contain as nearly as practicable an equal number of members. The council shall announce such division to the Society three months before the annual meeting. The council shall consist of the president, the vice-president and the secretary; and of twelve members, elected one from each district, and the terms of office of such twelve councillors shall be arranged so that four of them shall expire each year."

### 9—OFFICERS.

Substitute the following: "The officers of the Society, as provided in the constitution, shall be elected as hereinafter provided, except that whenever a vacancy occurs it shall be filled by a majority vote of the council. Their respective terms of office shall begin at the close of the meeting at which they are elected. The duties of the several officers shall be such as usually attach to the office, or such as may be determined by the council. The council may dele-

gate its powers to persons or committees, and may make such rules and regulations as may be necessary for the proper conduct of the business of the Society, provided that these are in harmony with the constitution and by-laws."

### 10—COUNCILLORS.

Substitute the following: "The term of office of a councillor shall begin immediately upon election. Vacancies occurring at any time in the council may be filled until the next annual election by a majority vote of the remaining members. At the next annual election new councillors shall be elected to fill such vacancies for the unexpired term of office only."

### 11—NOMINATIONS.

Substitute the following: "Three months before the annual meeting, the secretary shall send a nomination ballot to each member of the Society in the districts for which new councillors must be elected, with the request that he shall nominate three members, in such manner as the council may direct, as candidates for councillor to represent his district; and shall send a nomination ballot to each member of the Society entitled to vote, with the request that he shall nominate one member for president, one for vice-president and one for secretary. Nominations shall be received for twenty days, when the polls shall be closed. Sixty days before the annual meeting the secretary shall prepare a ballot, containing in and for each of these districts not less than three names, and for the offices of president, vice-president and secretary, each, not less than three names, which shall be in each case those receiving the largest number of nominating votes before the closing of the polls. This ballot shall be mailed to each member of the Society entitled to vote, who may vote for one councillor in each district, having the right to substitute names not on the list, and to cast not over three votes for a single candidate, provided that the total number of votes cast by such member shall not exceed the total number of vacancies to be filled; and who may cast one vote for president, vice-president and secretary, respectively, having the right to substitute names not on the list. The ballot shall be signed, sealed and voted as prescribed in by-law 16."

### 12—CANVASSING BALLOTS FOR COUNCILLORS.

Substitute the following: "At noon of the first day of the annual meeting the polls shall be closed and the ballots counted by two tellers appointed by the president. Councillors shall not be eligible

for such appointment. The candidate for councillor in each district, and the candidate for the respective elective offices, receiving the largest number of votes, shall be elected. In case of a tie the president shall cast the deciding vote."

### 13—MEETINGS OF COUNCIL.

Substitute the following: "Meetings of the council for the transaction of business may be called at any time by the president, and shall be called at the request in writing of three councillors. Unless for reasons of weight, at least ten days' notice of meetings shall be given. Five councillors, present in person or by proxy, shall constitute a quorum. A letter ballot of the council shall be taken on any question of importance, if so ordered by the presiding officer at any meeting, or at the request in writing of three councillors. Whenever a letter ballot of the council be taken, a majority vote of the council shall be required to pass the motion put to ballot, except that letter ballots upon candidates for admission to membership shall be decided as provided in by-law 1."

### 14—MEETINGS OF THE SOCIETY.

Cancel the last sentence and substitute the following: "Resolutions endorsing or condemning matters of public or professional interest shall take such course as may be prescribed by the council in duly formulated rules, but such rules must provide that not less than thirty days be allowed for any ballot of the membership of the Society."

### 16—SEALED LETTER BALLOTS.

Cancel the last sentence and substitute the following: "The result of the ballot shall be communicated to the members of the Society at such time and in such manner as the council shall determine."

### 17—VOTE OF CONFIDENCE.

Cancel the second sentence and substitute the following: "Such vote must be inaugurated within fifteen days after a motion for a vote of confidence has been passed; and the majority of votes received within thirty days after issuance of the ballot shall decide."

There being no further business the meeting was then adjourned.

W. R. INGALLS, *Secretary.*



## COMMUNICATIONS.

**W. R. Ingalls.**—In view of the proposed code of professional ethics, drafted by a committee of the Philadelphia section, and submitted to the society for discussion, it will be of assistance perhaps, and of interest anyway, to record in our proceedings a code of ethics and schedule of charges that have lately been adopted by the Council of the American Institute of Consulting Engineers. This organization, formed a year or so ago, comprises about 50 members who are consulting engineers under the strictest definition of that term, and are recognized as engineers of high standing. The code of ethics drafted by this organization is evidently intended to apply to professional men engaged in general practice, rather than to professional men employed on salary. The code adopted by the American Institute of Consulting Engineers is as follows:

**Code of Ethics.**—It shall be considered unprofessional and inconsistent with honorable and dignified bearing for any member of The American Institute of Consulting Engineers:

(1) To act for his clients in professional matters otherwise than in a strictly fiduciary manner or to accept any other remuneration than his direct charges for services rendered his clients, except as provided in Clause 4.

(2) To accept any trade commissions, discounts, allowances, or any indirect profit or consideration in connection with any work which he is engaged to design or to superintend, or in connection with any professional business which may be entrusted to him.

(3) To neglect informing his clients of any business connections, interests or circumstances which may be deemed as influencing his judgment or the quality of his services to his clients.

(4) To receive, directly or indirectly, any royalty, gratuity or commission on any patented or protected article or process used in work upon which he is retained by his clients, unless and until receipt of such royalty, gratuity or commission has been authorized in writing by his clients.

(5) To offer commissions or otherwise improperly solicit professional work either directly or by an agent.

(6) To attempt to injure falsely or maliciously, directly or indirectly, the professional reputation, prospects or business of a fellow engineer.

(7) To accept employment by a client while the claim for compensation or damages, or both, of a fellow engineer previously employed by the same client and whose employment has been terminated, remains unsatisfied or until such claim has been referred to arbitration or issue has been joined at law or unless the engineer previously employed, has neglected to press his claim legally.

(8) To attempt to supplant a fellow engineer after definite steps have been taken toward his employment.

(9) To compete with a fellow engineer for employment on the basis of professional charges by reducing his usual charges and attempting to underbid after being informed of the charges named by his competitor.

(10) To accept any engagement to review the work of a fellow engineer for the same client, except with the knowledge or consent of such engineer or unless the connection of such engineer with the work has been terminated.

**Schedule of Fees.**—As a general guide in determining fees for professional services, The American Institute of Consulting Engineers recognizes the propriety of charging: A, a per diem rate; B, a fixed sum; or C, a percentage on the cost of work; as follows:

*A—Per Diem Rate.*

(1) Charges for consultations, reports and opinions should vary according to the character, magnitude and importance of the work or subject involved and according to the experience and reputation of the individual engineer, from \$100 per day to a higher figure, and in addition where expert testimony is required or where otherwise conditions warrant so doing, a retainer varying from \$250 to \$1,000 and upward. An additional charge should be made for all actual expenses such as traveling and general office expenses and field assistants and materials, with a suitable allowance for indeterminate items. In such cases six hours of actual work should be considered one day, except that while absent from the home city each day of twenty-four hours or part thereof should be considered one day, irrespective of the actual hours of time devoted to the case.

*B—Fixed Sum.*

(2) A fixed total sum for above-mentioned services may be agreed on in lieu of per diem charges. A fixed sum may also be charged for a portion or all of the items of preliminary surveys, studies, examinations, reports, detail plans, specifications and supervision, including all of the expenses above recited in (A).

*C—Percentages on the Cost of Work.*

(3) For preliminary surveys, studies and report on original project, or for examination and report on project prepared by another engineer, including in both cases all expenses of every nature except those that may be specifically omitted by agreement—from  $1\frac{1}{2}$  per cent to 3 per cent on the estimated cost of the work.

(4) For the preliminary stage (3) and in addition thereto detail plans and specifications for construction, including all expenses of every nature except those that may be specifically omitted by agreement—from  $2\frac{1}{2}$  per cent to 5 per cent of the estimated cost of the work.

(5) For the preliminary and middle stages (3) and (4) and in addition thereto general supervision during construction, including all expenses of every nature except those that may be specifically omitted by agreement—5 per cent, but more for work costing comparatively small amounts, and from 4 per cent to 5 per cent where the amount involved is considerable.

(6) For full professional services (3), (4) and (5) and management, including the awarding of contracts, and including all expenses of every nature except those that may be specifically omitted by agreement, 10 per cent; but more for work costing comparatively small amounts, and 6 per cent to 10 per cent where the amount involved is considerable.

(7) When desired the percentage basis may be adopted for one or more stages, supplemented by a daily or monthly charge or fixed sum for the remaining stage or stages.

*D—General Provisions.*

(8) The period of time should be designated during which the agreed percentages and daily or monthly charges or fixed sum shall apply and beyond which period an additional charge shall be made.



(9) The percentages are to be computed on the entire cost of the completed work or upon the estimated cost, pending execution or completion.

(10) Payments shall be made to the engineer from time to time in proportion to the amount of work done.

(11) When alterations or additions are made to contracts, drawings or specifications, or when services are required in connection with negotiations, legal proceedings, failure of contractors, franchises or right-of-way, a charge based upon the time and trouble involved shall be made in addition to the percentage fee agreed upon.

## PERSONALS.

Philip Argall, who left Denver recently on a trip to Alaska, was on the ss. "Spokane," which struck a rock and foundered in Seymour Narrows on the night of June 29. Mr. Argall was accompanied by two of his daughters. All of the Argalls were saved and have returned to Denver. Mr. and Mrs. Gardner Williams, of Washington, D. C., were also on the steamship. Mrs. Williams was killed.

John M. Boutwell, consulting geologist for Phelps, Dodge & Co., is making a survey of the mining geology of the property of the Moctezuma Copper Company at Pilaes de Nacozari, Sonora, Mex.

R. Gilman Brown has recently been on a visit to the Kyshtim works, in the Urals, Russia.

Edward L. Dufourcq recently made an examination of the Sovereign mine, Sierra County, California.

Fred Hellmann has assumed the management of the properties of the Wettlaufer-Lorrain Silver Mines Co., in northern Ontario.

J. A. Holmes is visiting Alaska.

Louis D. Huntoon has been in the Porcupine district, Ontario, making a study of the conditions there.

John Duer Irving is at Cuzco, Peru.

Dr. Andrew C. Lawson, of the University of California will make an examination of the Lake Superior region during the summer for the Canadian Geological Survey.

Waldemar Lindgren, of the United States Geological Survey, is making a study of the National district, Nevada.

James MacNaughton, general manager for the Calumet & Hecla Mining Co., is touring Europe.

Prof. Robert H. Richards went to the Lake Superior country on July 11.

Dr. Otto Sussman has returned to New York from a prolonged Western trip.

Walter Harvey Weed is at present engaged in Butte, Mont., in the interests of the Butte-Ballaklava Copper Co.

J. Cuthbert Welch, who has been superintendent of the smelting works of the East Butte Copper Company at Butte, Mont., has resigned that position owing to the illness of his wife, which has necessitated removal to a more congenial climate. Mr. Welch is at present at Spokane, Wash.

## CHANGES OF ADDRESSES.

Aldridge, W. H.....603 Central Bldg., Los Angeles, Cal.  
Hixon, H. W.....Worthington, Ont.  
Hutchins, J. P.....20 Galernaya St., St. Petersburg, Russia.  
Turner, H. W.....62 London Wall, London, E. C., Eng.

## MEMBERS ELECTED IN JUNE, 1911.

Burgess, John A.....Wonder, Nev.  
Chief Engineer, Tonopah Mining Company.  
Cottrell, F. G.....2332 Fulton St., Berkeley, Cal.  
Asst. Prof. of Physical Chemistry, University of California.  
Huntley, Dwight Brunel.....31 Bella Vista Ave., Oakland, Cal.  
Mining Engineer.  
Lindsley, Halstead.....60 State St., Boston, Mass.  
Consulting Mining Engineer.  
Nutter, Edward Hoit.....42 Broadway, New York.  
Chief Engineer, Minerals Separation American Syndicate, Ltd.

## MINING AND METALLURGICAL SOCIETY OF AMERICA

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- Pomeroy, William Arthur.....55 Wall St., New York.  
Asst. Mgr. of Mines, New Jersey Zinc Company.
- Rainsford, Ralph S.....Jackson, Cal.  
Gen. Mgr., Argonaut Mining Company and Golden Rule  
Mines Company.



# Mining and Metallurgical Society of America

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Vol. IV

September 1, 1911.

No. 8

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## ANNOUNCEMENTS.

The publication of this bulletin has been delayed in order to report the result of the ballot on amendment of by-laws.

**Amendment of By-Laws.**—For the canvass of this ballot, which closed Sept. 5, the President appointed E. G. Spilsbury and F. W. Parsons as tellers, who reported as follows:

J. Parke Channing,  
*President.*

Sir:

We beg to report that we have this day canvassed the ballot upon questions submitted to vote of the membership on Aug. 5, 1911, as follows:

2.—To amend Article 1 of the By-Laws, as stated in Bulletin No. 38.

3.—To amend Article 3 of the By-Laws, as stated in Bulletin No. 38.

4.—To amend Article 5 of the By-Laws, as stated in Bulletin No. 38.

5.—To amend Articles 8, 9, 10, 11 and 12 of the By-Laws, as stated in Bulletin No. 38.

6.—To amend Article 13 of the By-Laws, as stated in Bulletin No. 38.

7.—To amend Article 14 of the By-Laws, as stated in Bulletin No. 38.

8.—To amend Article 16 of the By-Laws, as stated in Bulletin No. 38.

9.—To amend Article 17 of the By-Laws, as stated in Bulletin No. 38.

The number of members eligible to vote was 211. The number of ballots cast was 141, of which 11 were blank. Upon question No. 2, there were 130 in the affirmative and none in the negative; upon question No. 3, 130 in the affirmative and none in the negative; upon question No. 4, 129 in the affirmative and one in the negative; upon question No. 5, 130 in the affirmative and none in the negative; upon question No. 6, 130 in the affirmative and none in the negative; upon question No. 7, 130 in the affirmative and none in the negative; upon question No. 8, 129 in the affirmative and one in the negative; upon question No. 9, 130 in the affirmative and none in the negative.

E. G. SPILSBURY,

F. W. PARSONS,

*Tellers.*

Sept. 5, 1911.

It appears from the report of the tellers that all the questions submitted to vote of the Society received the affirmative votes of more than a majority of the membership entitled to vote. I declare therefore that the amendments to articles 8, 9, 10, 11 and 12 of the by-laws have been carried, but they being dependent upon the adoption of the proposed amendment to article 5 of the constitution, the effectiveness of the amendments to these by-laws is contingent upon the passage of the amendment to article 5 of the constitution.

I declare the amendments to articles 1, 3, 5, 13, 14, 16 and 17 of the by-laws to have been carried and to be effective immediately.

J. PARKE CHANNING, *President.*

## ACTIONS OF THE SOCIETY.

It is desirable to put in convenient form the actions that have formally been taken by the Mining and Metallurgical Society of America in matters of public interest. Although many subjects have been discussed, formal action, by letter-ballot of the entire membership of the Society has been taken in only two matters. These are the following:

**Protection of Mine Investors.**—In August, 1909, the following resolutions were adopted:

WHEREAS, The overvaluation of mining properties by investors and the public, due to ignorance of mining conditions and a lack of appreciation of the real nature of the investment, tends to increase unduly the profits of mine promoters and speculators, and to increase unnecessarily the financial risks taken by mine investors, to the ultimate disadvantage of the mining industry.

RESOLVED, That it is the opinion of the Mining and Metallurgical Society of America that, for the protection of shareholders and investors, every mining company should publish an annual report within ninety days of the close of its fiscal year, and such report should incorporate the following information:

1. A brief review of the past history of the property, the work accomplished and the results obtained, with tabulated statement of expenditures and receipts from the beginning, marketable products made each year, and the sums received from the sale of same, the annual net earnings and the disposition made of such earnings.

2. A similar review, but in more detail, of the work of the year, with statements of the assets and liabilities (these statements to show all details as to capitalization of the company; the number and classes of shares outstanding at date of the report; the respective rights of these shares; the number of shares remaining in the treasury; any options or contracts on such shares; any bonded indebtedness), receipts and disbursements, cost sheet and other information as to work accomplished and results obtained.

3. A statement of ore reserves at the date of the report, compared with the reserves of the previous year, with an estimate, by competent authority, of the probable life of the mine.

**Mine Inspectors.**—In July, 1911, the following was adopted:

RESOLVED, That in the opinion of the Mining and Metallurgical Society of America, State inspectors of mines should be appointed and should not be elected.

## OBITUARY.

**Alfred J. Bettles**, of Salt Lake City, died at that place, Aug. 3, at the age of 55 years. He was born in England and moved to Ontario, Canada, while still a young man. From Ontario he went to Colorado and there became interested in mining and milling. After some years of experience in that State he went to Montana to be superintendent of the mill of the Granite



Mountain Mining Company, at Philipsburg and in that position attained a high reputation. While with this company he built its large mill, at which plate amalgamation followed by concentration of the sulphides and treatment of the tailings by pan amalgamation was used. Mr. Bettles improved a great deal on the milling operations, and under his direction the property had its most successful period. From Montana, Mr. Bettles went to Salt Lake, and became connected with the Highland Boy mine (Utah Consolidated), at Bingham. While at the Highland Boy he made milling experiments on the porphyry ores of the Boston Consolidated, using the old Markham mill, with some alterations, and possibly was the first man to conduct experiments on this class of ore. Mr. Bettles was for several years with the Newhouse interests, and had charge of their mill work, designing and building the Cactus mill at Newhouse and the Boston Consolidated mill, at Garfield. After the latter was completed he continued as its manager, but retired from that position about two years ago upon the absorption of the Boston Consolidated by the Utah Copper Company. Since then he had been engaged in general consulting work and in the direction of his private affairs. At the time of his death, he had charge of the mill work of the Wilbert Mining Company, and was designing and building a silver-lead concentrator at its property on Little Lost river, Blaine county, Idaho. As a mill man and metallurgist, Mr. Bettles stood high in his profession. At the time of his death he was president of the United Grocery Company, of the Corocol Mining Company in Mexico, and was interested in other mining companies. In addition to these, he was interested in a number of enterprises, including the assay office and metallurgical works of Bettles & Bardwell.

## PERSONALS.

J. A. Burgess is superintendent for the Nevada Wonder Mining Company, at Wonder, Nevada.

J. Morgan Clements is in the West on professional business.

F. G. Cottrell has been appointed by the Bureau of Mines to take charge of a special investigation of the smelter fume problem.

W. R. Ingalls intends to start Sept. 16 on a western trip, during which he will visit New Mexico, Arizona, California, Nevada, Utah and Montana, returning to New York about Nov. 15.

Waldemar Lindgren of the U. S. Geological Survey, will soon commence the work of bringing the study of the geology of the Tintic district up to date.

Prof. H. S. Munroe has returned from his European trip.

William Fleet Robertson, provincial mineralogist for British Columbia, has been engaged this summer in examining and obtaining information relative to the mineral-bearing district around Hazelton, in the Skeena River country.

Louis A. Wright left San Francisco on July 18, for a trip to Asia.

## CHANGES OF ADDRESSES.

Nutter, E. H. . . . Merchants Exchange Bldg., San Francisco, Cal.  
Bain, H. Foster. . . . . 420 Market St., San Francisco, Cal.  
Sizer, F. L. . . . . 281 Addison Av., Palo Alto, Cal.  
Spaulding, Morril B. . . . . San Andreas, Calaveras Co., Cal.

## MEMBERS ELECTED IN AUGUST, 1911.

Hoffmann, August O.,  
Polevskay savod., Uramorskaia, Perm, Russia.  
Manager, Polevskay Mines and Reduction Works, Sysert Estate.  
Lyon, Dorsey A. . . . . Heroult, Shasta Co., Cal.  
Manager, Noble Electric Steel Company.  
Rawlings, Stuart L. . . . . San Dimas, Durango, Mexico.  
Manager, San Luis Mining Company.  
Wilson, William A. . . . . Salt Lake City, Utah.  
Consulting Mining Engineer.

# MINING AND METALLURGICAL SOCIETY OF AMERICA

## MEMBERS.

September 1, 1911.

Aldridge, W. H.	603 Central Bldg., Los Angeles, Cal. Managing Director, Inspiration Copper Company.
Allen, John H.	82 Beaver St., New York City Consulting Metallurgist, Knox & Allen.
Appleby, William R.	Minneapolis, Minn. Prof. of Metallurgy, State University.
Argall, Philip	First National Bank Bldg., Denver, Colo. Consulting Mining Engineer.
Arnold, Ralph	70 Orange Grove Boulevard, Pasadena, Cal. Consulting Geologist and Mining Engineer.
Austin, L. S.	251 W. 2d North St., Salt Lake City, Utah Consulting Metallurgist.
Bain, H. Foster	420 Market St., San Francisco, Cal. Editor, <i>Mining and Scientific Press</i> .
Beard, J. T.	815 Sunset Ave., North Park, Scranton, Pa. Mining Engineer.
Beeler, H. C.	1004 First National Bank Bldg., Denver, Colo. Consulting Mining Engineer.
Bellinger, Herman C.	Cobar, N. S. W. Consulting Metallurgical Engineer.
Benjamin, Edward H.	75 Fremont St., San Francisco, Cal. President, Joshua Hendy Iron Works.
Boutwell, J. M.	1323 de la Vina St., Santa Barbara, Cal. Mining Geologist.
Bradley, F. W.	Crocker Building, San Francisco, Cal. President, Bunker Hill & Sullivan M. & C. Co.
Bradley, Philip Read	35 Wall St., New York City Consulting Mining Engineer, Exploration Company of New York.
Branner, J. C.	Stanford University, Cal. Prof. of Geology, and Vice-President, Stanford University.
Brayton, Corey C.	203 Hagelstein Bldg., Sacramento, Cal. Gen. Supt., Rock Crushing Dept., Natomas Cons. of Cal.
Brock, Reginald W.	Ottawa, Canada Director, Geological Survey of Canada.
Brooks, A. H.	Washington, D. C. Geologist, U. S. Geological Survey.
Brown, R. Gilman	62 London Wall, London, E. C., England Consulting Mining Engineer.
Browne, Ross E.	234 Perry St., Oakland, Cal. Mining Engineer.
Buck, Stuart M.	Bramwell, W. Va. Mining Engineer.
Buckley, E. R.	Rolla, Mo. Geologist, Federal Lead Co.
Burch, Albert	Crocker Bldg., San Francisco, Cal. Mining Engineer.
Burgess, John A.	Wonder, Nev. Supt., Nevada Wonder Min. Co.
Butters, Charles	333 Kearny St., San Francisco, Cal. Mining Engineer and Metallurgist.
Caetani, Gelasio	Crocker Bldg., San Francisco, Cal. Consulting Mining and Metallurgical Engineer.



# MINING AND METALLURGICAL SOCIETY OF AMERICA

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Cairns, F. L.....	Houghton, Mich. Supt., Michigan Smelting Co.
Cates, Louis Shattuck.....	Ray, Ariz. Supt. of Mines, Ray Consolidated Copper Co.
Catlin, Robert M.....	Franklin Furnace, N. J. Engineer, New Jersey Zinc Co.
Chance, H. M.....	819 Drexel Bldg., Philadelphia, Pa. Mining Engineer.
Channing, J. Parke.....	42 Broadway, New York City Consulting Mining Engineer.
Chase, Charles A.....	921 Equitable Bldg., Denver, Colo. Consulting Mining Engineer.
Chase, Edwin E.....	932 Equitable Bldg., Denver, Colo. Mining Engineer.
Chauvenet, S. H.....	Sheridan, Pa. Manager, Berkshire Iron Works.
Christy, S. B.....	Berkeley, Cal. Prof. of Mining and Metallurgy, University of California.
Claghorn, C. R.....	Tacoma, Wash. Gen. Mgr., Northwestern Improvement Co.
Clark, C. D.....	Care U. S. Smelting, Refining & Mining Co., Mammoth, Cal. Mining Engineer.
Clark, W. B.....	Baltimore, Md. State Geologist, and Prof., Johns Hopkins University.
Clements, J. Morgan.....	42 Broadway, New York City Mining Geologist.
Clevenger, G. Howell.....	Palo Alto, Cal. Associate Prof. of Metallurgy, Stanford University.
Cobb, Collier.....	Chapel Hill, N. C. Prof. of Geology, University of North Carolina.
Collins, George E.....	418 Boston Bldg., Denver, Colo. Consulting Engineer; Gen. Mgr., Argo Company.
Comstock, Theodore B.....	Room 30, City Hall, Los Angeles, Cal. Mining Engineer.
Conner, Eli T.....	1134 Real Estate Trust Bldg., Philadelphia, Pa. Consulting Mining Engineer.
Corning, Christopher R.....	36 Wall St., New York City Consulting Mining Engineer.
Cottrell, F. G.....	2332 Fulton St., Berkeley, Cal. Physical Chemist, U. S. Bureau of Mines.
Cowles, Alfred H.....	Sewaren, N. J. Metallurgist.
Cox, W. Rowland.....	165 Broadway, New York City Mining Engineer.
Crosby, W. O.....	Boston, Mass. Prof. of Geology, Massachusetts Institute of Technology.
Crowell, Benedict.....	407 Perry-Payne Bldg., Cleveland, O. Consulting Mining Engineer.
Darton, N. H.....	Washington, D. C. Geologist, U. S. Bureau of Mines.
Derby, C. C.....	Nevada City, Cal. Mining Engineer.
d'Invilliers, E. V.....	506 Walnut St., Philadelphia, Pa. Mining Engineer.

# MINING AND METALLURGICAL SOCIETY OF AMERICA

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Dorr, John V. N.	846 Equitable Bldg., Denver, Colo. Consulting Metallurgical Engineer.
Douglas, James Stuart	Douglas, Ariz. Mine Owner and Banker.
Drake, Francis	8 Old Jewry, London, Eng. Consulting Engineer, Foreign Mines Development Co.
Drinker, Henry S.	South Bethlehem, Pa. President, Lehigh University.
DuBois, H. W.	Hydraulic; via Ashcroft, B. C. Mining Engineer.
Dufourcq, E. L.	Produce Exchange Building, New York Mining Engineer.
Dumble, E. T.	2003 Main St., Houston, Tex. Geologist.
Duncan, Murray M.	Ishpeming, Mich. Gen. Mgr., Cleveland Cliffs Iron Co.
Easton, Stanley A.	Kellogg, Idaho Mining Engineer; Mgr., Bunker Hill & Sullivan M. & C. Co.
Eurich, Ernst F.	15 William St., New York City Consulting Mining Engineer.
Fairchild, S. E., Jr.	530 Land Title Bldg., Philadelphia, Pa. Mining Engineer.
Farish, John B.	603 Colorado Bldg., Denver, Colo. Consulting Mining Engineer.
Finlay, J. R.	52 William St., New York City Consulting Mining Engineer.
Fitch, Walter	Eureka, Utah Pres. and Gen. Mgr., Chief Cons. Mining Co., etc.
Foote, Arthur DeWitt	Grass Valley, Cal. Mining Engineer.
Fowler, Samuel S.	Drawer 1024, Nelson, B. C. Mining Engineer.
Fuller, John T.	505 Park St., Honesdale, Pa. Consulting Mining Engineer.
Fulton, Charles H.	Cleveland, O. Prof. of Metallurgy, Case School of Applied Science.
Garrison, F. Lynwood	760 Drexel Bldg., Philadelphia, Pa. Mining Engineer.
Gemmell, Robert C.	Salt Lake City, Utah Gen. Supt., Utah Copper Co.
Goodale, Charles W.	Butte, Mont. Mgr., Boston & Montana Consolidated C. & S. Mining Co.
Gottsberger, B. Britton	Miami, Ariz. Gen. Mgr., Miami Copper Co.
Grant, U. S.	Evanston, Ill. Prof. of Geology, Northwestern University.
Griffith, William	Coal Exchange Bldg., Scranton, Pa. Mining Engineer.
Haas, Frank	Fairmont, W. Va. Consulting Engineer, Consolidation Coal Co.
Halberstadt, Baird	Pottsville, Pa. Mining Geologist.
Hartranft, Samuel S.	Norristown, Pa. Metallurgical Engineer.

# MINING AND METALLURGICAL SOCIETY OF AMERICA

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Havard, Francis T.....	Madison, Wis. Prof. of Metallurgy, University of Wisconsin.
Hayes, C. Willard.....	Washington, D. C. Geologist, U. S. Geological Survey.
Hellmann, Fred.....	25 Broad St., New York Consulting Mining Engineer.
Hersam, Ernest A.....	Berkeley, Cal. Associate Prof. of Metallurgy, University of California.
Hess, Frank L.....	Washington, D. C. Geologist, U. S. Geological Survey.
Hill, Frank A.....	512 S. Centre St., Pottsville, Pa. Mining Engineer.
Hixon, Hiram W.....	251 S. 41st St., Philadelphia, Pa. Metallurgical Engineer.
Hoffmann, Aug. O.....	Polevskay savod., Uramorskaia, Perm, Russia Mgr., Poleskay Mines and Reduction Works.
Hofman, H. O.....	Boston, Mass. Prof. of Metallurgy, Mass. Inst. of Technology.
Holden, Edwin C.....	Madison, Wis. Consulting Engineer; Prof. of Mining, University of Wisconsin.
Holmes, Joseph A.....	Washington, D. C. Director, United States Bureau of Mines.
Hoover, Herbert C.....	Red House, Hornton St., London, W. Managing Director, Oroya Brownhill, Etc.
Huntley, Dwight B.....	31 Bella Vista Ave., Oakland, Cal. Mining Engineer.
Huntoon, Louis D.....	42 Broadway, New York Consulting Mining Engineer.
Hutchins, J. P.....	341 Salisbury House, London, E. C., England Mining Engineer.
Hutchinson, E. S.....	Newtown, Pa. Mining Engineer.
Ingalls, W. R.....	505 Pearl St., New York City Mining Engineer; Editor, <i>Engineering and Mining Journal</i> .
Irving, J. D.....	New Haven, Conn. Mining Engineer; Prof. of Geology, Sheffield Scientific School.
Jackling, Daniel C.....	Salt Lake City, Utah General Manager, Utah Copper Co.
Jennings, Hennen.....	2221 Massachusetts Ave., Washington, D. C. Consulting Mining Engineer.
Jennings, Sidney J.....	42 Broadway, New York City Vice-Pres., U. S. Smelting, Refining and Mining Co.
Jopling, James Edmund.....	321 Cedar St., Marquette, Mich. Chief Engineer, Cleveland-Cliffs Iron Co.
Keating, John B.....	Winthrop, Shasta Co., Cal. Mgr., Bully Hill Copper Mg. and Smg. Co.
Keith, Frank A.....	713 Central Bldg., Los Angeles, Cal. Consulting Mining Engineer.
Kelly, William.....	Vulcan, Mich. Gen. Mgr., Penn. Iron Mining Co. and Republic Iron Co.
Kemp, J. F.....	New York City Prof. of Geology, Columbia University.
Kennedy, Eugene P.....	Treadwell, Alaska Asst. Supt., Alaska-Treadwell Gold Mining Co.



# MINING AND METALLURGICAL SOCIETY OF AMERICA

Keyes, Charles R.	944 Fifth St., Des Moines, Iowa
	Geologist.
Kimball, Edwin B.	209 Hillside Ave., Piedmont, Cal.
	Gen. Mgr., Esperanza Consolidated Oil Co.
Kinzie, Robert Allen	Treadwell, Alaska
	Gen. Supt., Alaska-Treadwell, Alaska-Mexican, Etc.
Kirby, Edmund Burgis	701 Security Bldg., St. Louis, Mo.
	Consulting Mining and Metallurgical Engineer.
Kirchhoff, Charles	244 Riverside Drive, New York City
	Metallurgist.
Knox, H. H.	82 Beaver St., New York City
	Mining Engineer.
Ladd, George E.	Wilburton, Okla.
	President, Oklahoma School of Mines.
Lathrop, W. A.	108 S. Fourth St., Philadelphia, Pa.
	Mining Engineer, Pres., Lehigh Coal and Navigation Co.
Lawall, Elmer H.	Wilkesbarre, Pa.
	Mining Engineer.
Lawrence, Benjamin B.	60 Wall St., New York City
	Consulting Mining Engineer.
Lawson, A. C.	Berkeley, Cal.
	Prof. of Geology, University of California.
Lawton, Charles L.	Hancock, Mich
	Gen. Mgr., Quincy Mining Co.
Leggett, Thomas H.	25 Broad St., New York City
	Consulting Mining Engineer.
Lessner, Charles B.	Carril, Spain
	Metallurgist.
Lewis, J. Volney	Singer Bldg., New York City
	Mining Geologist.
Lindgren, Waldemar	Washington, D. C.
	Geologist, U. S. Geological Survey.
Lindsley, Halstead	60 State St., Boston, Mass.
	Consulting Mining Engineer.
Loring, Frank C.	Home Life Bldg., Toronto, Ont.
	Consulting Mining Engineer.
Lyman, Benjamin Smith	708 Locust St., Philadelphia, Pa.
	Mining Engineer.
Lyon, Dorsey A.	Heroult, Cal.
	Mgr., Noble Electric Steel Co.
McClelland, James F.	Drawer C., Yale Sta., New Haven, Conn.
	Prof. of Mining Engineering, Yale University.
McCreath, Andrew S.	Harrisburg, Pa.
	Consulting Chemist.
MacNaughton, James W.	Calumet, Mich.
	Gen. Mgr., Calumet & Hecla Mining Co.
Malcolmson, J. W.	3728 Main St., Kansas City, Mo.
	Mining Engineer.
Mann, William S.	La Portilla, Durango, Mex.
	Engineer, Pilonas Mining Co.
Maynard, George W.	20 Nassau St., New York City
	Mining Engineer.
Melzer, Gustav Emil	Bourne, Ore.
	Mgr., Eastern Oregon Mining Co.

# MINING AND METALLURGICAL SOCIETY OF AMERICA

Mendenhall, W. C.	Washington, D. C.
Geologist, U. S. Geological Survey.	
Merriam, W. N.	Duluth, Minn.
Geologist.	
Merrill, Chas. W.	143 Second St., San Francisco, Cal.
Consulting Metallurgical Engineer.	
Merrill, F. J. H.	624 Citizens National Bank Bldg., Los Angeles, Cal.
Consulting Mining Engineer.	
Metcalf, G. W.	Kennett, Cal.
Manager, Mammoth Copper Mining Co.	
Moore, P. N.	611 Merchants' Laclede Bldg., St. Louis, Mo.
Mining Engineer.	
Morley, F. H.	Symes Bldg., Denver, Colo.
Mining Engineer.	
Mudd, Seeley W.	1101 Central Bldg., Los Angeles, Cal.
Mining Engineer.	
Munro, Charles H.	1043 Monadnock Bldg., San Francisco, Cal.
Gen. Mgr., Wild Goose Mining and Trading Co.	
Munroe, H. S.	New York City
Prof. of Mining, Columbia University.	
Newsom, John F.	Stanford University, Cal.
Associate Prof. of Mining, Stanford University.	
Nichols, Ralph.	Gilmore, Idaho
Mining Engineer.	
Norris, Robert Van A.	520 Second Nat. Bank Bldg., Wilkesbarre, Pa.
Consulting Mining Engineer.	
Noyes, William S.	819 Mills Bldg., San Francisco, Cal.
Pres., Butte Dredging Co., El Oro Dredging Co.	
Nutter, Edward H.	Merchants' Exchange Bldg., San Francisco, Cal.
Chief Engineer, Minerals Separation American Syndicate, Ltd.	
Packard, George A.	Silver Bow Block, Butte, Mont.
Consulting Mining Engineer.	
Page, William N.	1863 Kalorama Road, Washington, D. C.
Mining Engineer, Pres., Gauley Mt. Coal Co., Ansted, W. Va.	
Palmer, C. E.	2 Rector St., New York City
Consulting Mining Engineer.	
Parker, E. W.	Washington, D. C.
Statistician, U. S. Geological Survey.	
Parker, Richard A.	929 Foster Bldg., Denver, Colo.
Consulting Mining Engineer.	
Parsons, Floyd W.	505 Pearl St., New York City
Editor, <i>Coal Age</i> .	
Patch, Maurice B.	Buffalo, N. Y.
Supt., Buffalo Smelting Works.	
Patterson, G. S.	Vivian, McDowell Co., W. Va.
Mining Engineer.	
Payne, Henry M.	Morgantown, W. Va.
Consulting Mining Engineer.	
Peele, Robert.	New York City
Prof. of Mining, Columbia University.	
Penrose, R. A. F., Jr.	460 Bullitt Bldg., Philadelphia, Pa.
Consulting Mining Geologist.	
Perry, Oscar B.	165 Broadway, New York City
Gen. Mgr., Yukon Gold Co.	
Pomeroy, William A.	55 Wall St., New York City
Asst. Mgr. of Mines, New Jersey Zinc Co.	

# MINING AND METALLURGICAL SOCIETY OF AMERICA

- Potter, W. B.....1225 Spruce St., St. Louis, Mo.  
Mining Engineer; Mgr., St. Louis Sampling & Testing Works.
- Pratt, Joseph H.....Chapel Hill, N. C.  
State Geologist and Prof. of Geology, Univ. of North Carolina.
- Prichard, William A.....Santa Cruz de Alaya, Sinaloa, Mexico  
Mining Engineer.
- Pringle, Charles A.....Chihuahua Foreign Club, Chihuahua, Mexico  
Mining Engineer.
- Pumpelly, Raphael.....Newport, R. I.  
Geologist.
- Queneau, Augustin Leon Jean.....929 Chestnut St., Philadelphia, Pa.  
Consulting Engineer, Wetherill Finished Castings Co.
- Rainsford, Ralph S.....Jackson, Cal.  
Gen. Mgr., Argonaut Mining Co., and Golden Rule Mines Co.
- Ransome, F. L.....Washington, D. C.  
Geologist, U. S. Geological Survey.
- Rawlings, Stuart L.....San Dimas, Dgo., Mexico  
Mgr., San Luis Mining Co.
- Ray, F. A.....Columbus, Ohio  
Prof. of Mining Engineering, Ohio State University.
- Requa, M. L.....1026 Crocker Bldg., San Francisco, Cal.  
Mining Engineer.
- Rice, George S.....40th and Butler Sts., Pittsburg, Pa.  
Mining Engineer, U. S. Bureau of Mines.
- Richards, Robert H.....Boston, Mass.  
Prof. of Mining and Metallurgy, Mass. Inst. of Technology.
- Rickard, Forbes.....508 Equitable Bldg., Denver, Colo.  
Mining Engineer.
- Rickard, T. A.....Salisbury House, London, E. C., England  
Mining Engineer; Editor, *Mining Magazine*.
- Riordan, D. M.....165 Broadway, New York City  
Managing Director, La Grange Hydraulic Gold Mine, Etc.
- Robertson, William Fleet.....Department of Mines, Victoria, B. C.  
Provincial Mineralogist of British Columbia.
- Rogers, Allen H.....201 Devonshire St., Boston, Mass.  
Consulting Mining Engineer.
- Rohn, Oscar.....Butte, Mont.  
Mining Engineer.
- Sales, Reno H.....Butte, Mont.  
Geologist for Amalgamated Copper Co.
- Sanders, Richard H.....605 Drexel Bldg., Philadelphia, Pa.  
Mining Engineer.
- Schrader, F. C.....Washington, D. C.  
Geologist, U. S. Geological Survey.
- Sharpless, F. F.....52 Broadway, New York City  
Mining Engineer.
- Shockley, W. H.....No. 1 Queen Victoria St., London, E. C., England  
Mining Engineer.
- Sizer, F. L.....281 Addison Ave., Palo Alto, Cal.  
Mining Engineer.
- Smith, Franklin W.....Bisbee, Ariz.  
Consulting Mining Engineer.
- Smith, George Otis.....Washington, D. C.  
Director U. S. Geological Survey.
- Smyth, H. L.....Cambridge, Mass.  
Prof. of Mining and Metallurgy, Harvard University.



## MINING AND METALLURGICAL SOCIETY OF AMERICA

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Spaulding, M. B.....	San Andreas, Calaveras Co., Cal. Mining Engineer.
Sperr, Frederick W.....	Houghton, Mich. Prof. of Mining Engineering, Michigan College of Mines.
Spilsbury, E. G.....	45 Broadway, New York City Mining Engineer.
Spurr, J. E.....	71 Broadway, New York City Mining Geologist.
Starr, George W.....	Grass Valley, Cal. Gen. Mgr., Empire Mines.
Staunton, Wm. F.....	609 Central Bldg., Los Angeles, Cal. Consulting Mining Engineer.
Stone, George C.....	55 Wall St., New York City Chief Engineer, New Jersey Zinc Co.
Stonestreet, George D.....	Singer Bldg., New York City Consulting Mining Engineer.
Stoughton, Bradley.....	165 Broadway, New York City Consulting Metallurgical Engineer.
Stow, Audley H.....	Pocahontas, W. Va. Chief Engineer, Pocahontas Collieries Co.
Sussman, Otto.....	52 Broadway, New York City Consulting Mining Engineer.
Symmes, Whitman.....	Virginia City, Nev. Supt., United Comstock Pumping Assn., Mexican Gold and Silver Mining Co.
Thacher, Arthur.....	Roe Bldg., St. Louis, Mo. Mining Engineer.
Townsend, Arthur Rodman.....	25 Broad St., New York City Consulting Mining Engineer.
Turner, Henry W.....	62 London Wall, London, E. C., England Mining Geologist.
Tyrrell, Joseph B.....	534 Confederation Life Chambers, Toronto, Ontario Mining Geologist and Consulting Engineer.
Van Mater, Joseph A.....	55 Wall St., New York City Manager of Mines, New Jersey Zinc Co.
Walker, Arthur L.....	New York City Prof. of Metallurgy, Columbia University.
Washington, Henry S.....	Singer Bldg., New York City Mining Geologist.
Waterman, Douglas .....	Jocoro, Salvador, C. A. Mgr., Gigante Mining Co.
Weed, Walter Harvey.....	42 Broadway, New York City Consulting Mining Engineer.
Welch, J. Cuthbert.....	E. 734 Baldwin Ave., Spokane, Wash. Metallurgical and Mining Engineer.
Westervelt, William Y.....	17 Madison Sq., E., New York City Mining Engineer.
Wethey, Arthur H.....	40 West 59th St., New York City Mining Engineer.
Wheeler, Shelton K.....	135 E. Terrace St., Chattanooga, Tenn. Mining Engineer.
White, Robeson T.....	Rancagua, Chile Gen. Mgr., Braden Cons. Copper Co.
Wiard, Edward S.....	417 Boston Bldg., Denver, Colo. Mining Engineer.

## MINING AND METALLURGICAL SOCIETY OF AMERICA

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Williams, Gardner Fred.....	2201 R St., Washington, D. C.
Consulting Mining Engineer.	
Wilmot, H. C.....	Rye Valley, Ore.
Mgr., Commercial Mining Co.	
Wilson, William A.....	Salt Lake City, Utah
Consulting Mining Engineer.	
Winchell, Alexander N.....	Madison, Wis.
Prof. of Geology, University of Wisconsin.	
Winchell, H. V.....	505 Palace Bldg., Minneapolis, Minn.
Geologist.	
Wright, Louis A.....	42 Broadway, New York City
Consulting Mining Engineer.	
Yeatman, Pope.....	165 Broadway, New York City
Mining Engineer.	
Young, George J.....	737 Center St., Reno, Nev.
Prof. of Mining and Metallurgy, Mackay School of Mines,	
University of Nevada.	
Total Members.....	225

### DECEASED MEMBERS.

Bettles, Alfred J.....	Died Aug. 3, 1911
Blake, William P.....	Died May 22, 1910
Carpenter, Franklin R.....	Died April 1, 1910
Dudley, Charles B.....	Died Dec. 21, 1909
Emmons, Samuel Franklin.....	Died Mar. 28, 1911
Forrester, Robert.....	Died Dec. 20, 1910
Shelby, Charles F.....	Died Jan. 25, 1911
Sutton, Linton B.....	Died June 11, 1911
Thompson, Heber S.....	Died Mar. 9, 1911

# Mining and Metallurgical Society of America

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Vol. IV

October 1, 1911.

No. 9

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## ANNOUNCEMENTS.

The publication of this bulletin has been delayed in order to report the result of the ballot on amendment to the constitution.

**Medal.**—In canvassing ballot upon the following question: "Resolved, that the Mining and Metallurgical Society of America award annually, under rules to be subsequently formulated by the Council and approved by a majority of the Society, a gold medal valued at \$100 to the person who, in the opinion of the Society, has done most during the previous year to advance the arts of mining and metallurgical engineering, said medal to be awarded without regard to membership in the Society," the tellers reported under date of July 17 that 91 votes had been cast in the affirmative and 52 in the negative. In the constitution it is provided that members who have failed to vote upon the closing of the second ballot shall be recorded in the affirmative, but, owing to a technical error in the issuance of the second ballot, the President declared no vote upon this question, and directed that it be resubmitted to those members who had not yet voted upon it. This was done, members from whom votes had not been received being addressed by registered mail. This supplementary ballot was closed and counted on Sept. 19. Following is the report of the tellers:

J. Parke Channing,  
*President.*

Sir:

We beg to report that we have this day canvassed the supplementary ballot upon the resolution providing for the annual award of a medal by the Mining and Metallurgical Society of America. We report that 32 ballots were cast in the affirmative and 6 in the negative. Adding these to the ballots previously received, the total is 123 votes in favor of the resolution, and 58 against it. The number of members eligible to vote at the time of the original submission of this question was 195.

E. G. SPILSBURY,  
F. W. PARSONS,

*Tellers.*

Sept. 19, 1911.



## MINING AND METALLURGICAL SOCIETY OF AMERICA

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More than a majority of the membership of the Society having voted in favor of the resolution to award a medal, I hereby declare this resolution to have been carried, and to be the formal action of the Mining and Metallurgical Society of America.

J. PARKE CHANNING,  
*President.*

Sept. 20, 1911.

**Amendment to Constitution.**—Canvass has been made of the ballot to amend article 5 of the constitution to read as follows:

"The affairs of the Society, subject to the provisions of the constitution and by-laws, shall be managed by a council of fifteen members, who shall hold office for the prescribed term or terms. The executive officers of the Society shall be a president, a vice-president, and a secretary (who shall also be treasurer), which officers shall be members of the council ex-officio, and shall hold office for one year, or until the close of the meeting at which their successors in office are elected, except that the secretary shall hold office until his successor accepts transfer of the duties of that office. Additional officers may be elected by the council from time to time if necessary for the purposes of the Society. All officers shall be eligible for re-election. Vacancy in the office of president shall be filled by the vice-president, who shall then become president, and the council shall forthwith elect a vice-president; and if necessary shall elect a member of council of which the number must always be fifteen."

The President appointed E. G. Spilsbury and F. W. Parsons as tellers, who reported as follows:

J. Parke Channing,  
*President.*

Sir:

We beg to report that we have this day canvassed the ballot upon amendment to article 5 of the constitution, submitted to vote of the membership on Aug. 5, 1911. We report that 144 votes were cast in the affirmative and 0 votes in the negative. The number of members eligible to vote was 211.

E. G. SPILSBURY,  
F. W. PARSONS,  
*Tellers.*

Oct. 4, 1911.

It appears from the report of the tellers that the amendment to the constitution submitted to the vote of the Society received the affirmative vote of more than a majority of the membership entitled to vote, and consequently I declare this amendment to

## MINING AND METALLURGICAL SOCIETY OF AMERICA

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have been carried, and furthermore declare **that** the amendments to articles 8, 9, 10, 11 and 12 of the by-laws, previously carried, now become effective.

Oct. 4, 1911.

J. PARKE CHANNING,  
*President.*

**Election Districts.**—According to by-law No. 8, the council is from time to time required to divide the territory occupied by the membership into 12 geographical districts to be designated by numbers. Each of the districts shall be, as nearly as practicable, contiguous territory; and each shall contain, as nearly as practicable, an equal number of members. The council is required to announce such division to the Society three months before the annual meeting.

In accordance with the above provisions the council has made the following divisions:

- Districts 1, 2, 3. New York and New England.  
4, 5. New Jersey, Pennsylvania, West Virginia, Ohio and Maryland.  
6. District of Columbia and Southern States.  
7. Michigan, Minnesota, Wisconsin, Illinois, Iowa and Missouri.  
8. Colorado, Utah and Nevada.  
9, 10. Oregon, Alaska, and California, except Los Angeles, Santa Barbara and Pasadena.  
11. Arizona, Mexico, Texas, Oklahoma and those places in California not included in districts 9 and 10.  
12. Montana, Idaho, Washington and Canada.

Nominations for councillors for the ensuing year will be made from the above districts.

W. R. INGALLS,  
*Secretary.*

Oct. 6, 1911.

## COMMUNICATIONS.

### ALASKA COAL LAND LAWS.

At the meeting of the Philadelphia section of the Society, on Sept. 19, 1911, the following resolution was adopted on motion of Eli T. Conner, seconded by H. M. Chance:

Resolved, That all the members of the section be requested by the Secretary to prepare briefs, embodying an expression of

their individual views regarding a proper system of laws and regulations affecting the acquirement of title, form of location or entry, and right to hold or lease and operate coal lands in the territory of Alaska. This action is in response to a request from the Committee on Mines and Mining of the House of Representatives at Washington, to W. R. Ingalls, Secretary of the Society, for suggestions which will aid in enlightening that committee in preparing a bill for submission at the next meeting of Congress, covering the operation of mines in Alaska.

Resolved, That our members be requested to submit these briefs to the Secretary in time for the next meeting of the section on October 3, 1911.

The Section is already in receipt of a most important and valuable communication upon this subject from William Griffith, of Scranton, Pa., appearing in this Bulletin as a part of the minutes of the meeting of Sept. 19.

The Secretary would urge upon you the expediency of complying with this patriotic duty, in order that the Government be supplied with expert information at this critical period, in the hope that they will not only enact sensible laws but will forever put a stop to the misstatements and political squabbling now taking place upon this important subject.

## MINUTES OF MEETINGS.

### NEW YORK.

The September meeting of the New York section was held, after an informal dinner, at the Engineers' Club on Tuesday, Sept. 12, 1911, at 8 p. m. The meeting was called to order by the chairman, G. C. Stone. Those present were, Messrs. M. Adams, E. T. Conner, J. R. Finlay, L. D. Huntoon, W. R. Ingalls, B. B. Lawrence, J. E. McAllister, R. V. A. Norris, F. W. Parsons, R. Peele, A. L. Queneau, G. C. Stone, B. Stoughton, and A. H. Wethey.

Nominations for officers for the year being called for by the chairman, W. R. Ingalls nominated G. C. Stone for the office of Chairman; the motion was carried by acclamation. E. G. Spilsbury was nominated for Vice-Chairman by B. B. Lawrence; nomination seconded and Mr. Spilsbury elected. L. D. Huntoon was nominated for Secretary by R. Peele and, the motion being duly seconded, was elected.

The retiring Secretary-Treasurer of the section then presented his report for the year, as follows:



## MINING AND METALLURGICAL SOCIETY OF AMERICA

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Balance on hand, Sept. 15, 1910.....	\$12.08	
Received:		
Assessment No. 1 from 1 member.....	1.00	
Assessment No. 2 from 4 members.....	8.00	
Assessment No. 3 from 38 members.....	190.00	
	<hr/>	
Total .....		\$211.08
Stationery .....	\$0.50	
Postage, .....	26.72	
Typewriting, .....	14.00	
Expenses at club in connection with meeting.....	13.00	
Stenographic reporting of meetings.....	30.00	
	<hr/>	
Total expenses .....	\$83.22	
Balance on hand, September 12, 1911.....	127.86	
	<hr/>	
		\$211.08

Assessment No. 1 has been paid by all members.

Assessment No. 2 has been paid by all members but one.

Assessment No. 3 has been paid by all members but three.

A. L. WALKER,  
*Secretary-Treasurer.*

On motion of B. B. Lawrence, the report of the Secretary-Treasurer was adopted.

The chairman then introduced the subject for the evening's discussion, viz., the formulation of a code of professional ethics, and called for expressions of opinion.

**B. B. Lawrence.**—The broad question is whether mining engineers should formulate a code of ethics and whether it is advisable to do so. I am very much in favor of it, especially for the younger men just entering the profession. It would give them an idea that the mining engineering profession has ethics. Whether it would be the part of wisdom to promulgate any code is, of course, a different matter, but I feel that it would be very interesting, at least, to discuss it, and am in favor of taking up the matter as part of this Winter's program. I therefore move that this section of the Society discuss the general question of a code of ethics, as presented by the Philadelphia section.

Motion seconded by A. H. Wethey, and carried.

The definition of engineers being up for discussion, the first clause of the proposed code, R. V. A. Norris gave his views as to whether all those mentioned should be included, stating that in the anthracite regions many men, who had no knowledge of engineering other than surveying, had brought discredit upon the profession by posing as engineers.

**B. Stoughton.**—I move to qualify the definition by adding the words, "provided they are qualified by education and experience to practice the said profession in an expert manner."

**R. Peele.**—I think Mr. Stoughton's amendment a good one, though perhaps the mode of expression might be altered. I second the amendment.

**B. B. Lawrence.**—I am in favor of discussing the question from the point of view that the engineers for whom the code is being formulated are members of the Society.

**W. R. Ingalls.**—There is no use in undertaking to prescribe rules for others, but we can prescribe them for our own members.

**R. V. A. Norris.**—Then would it not be wise to drop the discussion altogether? Our qualifications for membership would be sufficient to define those whom we mean.

The motion of Mr. Stoughton was put to a vote, and was not carried.

**J. R. Finlay.**—I think it would be well to state it as the opinion of this meeting that no definition of the word "engineer" should be attempted, except that it applies to members of this Society.

**R. V. A. Norris.**—I move that the clause defining the word "engineer" be omitted altogether.

The motion was seconded by Mr. Finlay, and carried.

**W. R. Ingalls.**—I move that it be the sense of this meeting that the preamble be re-drafted so as to make this code of ethics apply only to members of the Society.

Motion was seconded by Mr. Finlay, and carried. It was then decided to discuss the code as proposed by the Philadelphia section, and printed on pages 32 to 37 of Bulletin No. 33.

#### SECTION I.—OBLIGATIONS OF THE PROFESSION.

1. **Maintain Dignity and Honor.**—R. Peele suggested that the last eight words of the section be omitted. So moved by Mr. Ingalls, seconded and carried.

2. **Criticism.**—B. B. Lawrence moved that this paragraph be omitted for the present and reconsidered later. Motion seconded, and carried.

3. **Membership in Societies.**—B. B. Lawrence moved that this clause be discarded. Motion seconded by Mr. Ingalls, and carried.

4. **Assistance and Consultation.**—J. R. Finlay moved to change the section so as to read: "If any work entrusted to the engineer be beyond his ability, he should inform his clients

of the fact, so as to enable them to procure for him proper assistance." The motion was seconded by Mr. Lawrence.

**J. R. Finlay.**—A man who is thoroughly qualified on the side of mining, for instance, might not be qualified at all on the side of metallurgy, and his clients might not be aware of that fact, so it would be his duty to explain it to them that he requires professional assistance.

**L. D. Huntoon.**—Would it be his duty to notify his clients, or simply to employ the assistance he needs and pay for it himself?

**B. B. Lawrence.**—The latter, in itself, would not be ethical.

**R. Peele.**—I move to amend Mr. Finlay's motion by using the paragraph as printed, but omitting the words "To himself, to the profession and to his clients." Amendment accepted by Mr. Finlay. Motion as amended carried.

**5. Co-operation.**—R. V. A. Norris moved that the paragraph be amended so as to read, "The engineer should give as freely as circumstances permit of his knowledge and experience to other engineers." Motion seconded, but not carried.

W. R. Ingalls moved that the section be amended by substituting for "or employed by business rivals" the words "or when restrained by employer's orders." Motion seconded and carried.

**6. Good Fellowship.**—W. R. Ingalls moved that the clause be discarded as trite and unnecessary. Motion seconded, and carried.

**7. Litigation.**—W. R. Ingalls moved that the paragraph be adopted as printed. Motion seconded, and carried.

**8. Retaining Fees.**—J. R. Finlay moved that the clause be omitted. Motion seconded, and carried.

**9. Gratuitous Services.**—B. B. Lawrence moved that the clause be adopted as printed. Motion seconded, and carried.

**10. Underbidding.**—Moved and seconded that the tenth clause be discarded. Motion carried.

**11. Commissions.**—B. B. Lawrence moved that the paragraph be adopted. Motion seconded, and carried.

**12. Presents.**—J. R. Finlay moved that this paragraph be adopted. Motion seconded.

W. R. Ingalls moved as an amendment to the preceding motion that the article be adopted in principle, but that it be



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the sense of the meeting that the phraseology be improved. The motion was seconded and carried, whereupon the original motion as amended was then carried.

### SECTION II.—DUTIES TO THE PUBLIC.

**13. Protect Against Fraud.**—It was moved that this paragraph be adopted, as printed. Motion was seconded, and carried.

**14. Loyalty vs. Duty.**—Moved and seconded that this clause be adopted. Motion carried.

**15. Reports.**—B. Stoughton suggested, regarding the publication of reports, that engineers should state at the beginning of their reports an agreement upon which they were delivered, somewhat as follows: "It is agreed that the consideration, among others, upon which this report is delivered is that any publication thereof, or published reference thereto, shall include the complete report, or else shall be in a form approved by this office. Acceptance of this report is evidence of the agreement."

W. R. Ingalls moved that the article be referred to the committee of the Society on professional ethics, Mr. Lawrence being chairman of that committee. The motion was seconded and carried.

**16. When Engineer is Interested.**—It was moved that the paragraph be adopted as printed. Motion carried.

The meeting was then adjourned.

LOUIS D. HUNTOON,  
*Secretary.*

### PHILADELPHIA.

The September meeting of the Philadelphia section was held at the Engineers' Club, Sept. 19, at 8 p. m. Members present were Conner, Chance, Garrison, Hutchinson, Queneau and Sanders, Chairman. One visitor, Mr. A. E. Lehman, attended.

Minutes of the previous meeting, held March 17, 1911, were read and approved. Sundry bills dating from Feb. 28, 1911, incurred by the secretary for typewriting, postage and stenography amounting to \$7.63, were approved, and the secretary reimbursed.

The Chairman read a communication from Mr. Lewis Sanders, of New York, a non-member, who, in response to a general invitation, submitted his views regarding the proposed code of ethics, now being discussed by the Society. On motion by Mr. Hutchinson, duly seconded, this communication was ordered to be spread on the minutes, as follows:

## MINING AND METALLURGICAL SOCIETY OF AMERICA

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General Engineering Company,  
New York, May 21, 1911.

Committee on Engineering Ethics.

Gentlemen: I am pleased to avail myself of the invitation of your Society to criticise the report of your committee.

The adoption of an authoritative code of ethics by each of the professions would seem to be highly desirable. I would suggest, in order that such a code may meet with the unqualified acceptance that it should receive, to be of the highest value, that it should be confined strictly to matters of ethics, and that matters more properly relating to business practice be rigidly excluded. If it is expedient to codify matters of business practice, it would appear better to do so in a separate code.

I would, for the above reason, suggest that sections 8, 9 and 10 be struck out. The ethical principle underlying these sections might replace them. As an expression of this principle I would suggest:

"Engineers in competing for work should make the basis of their competition the value of the service they can render to the client, and not the lowness of the fee for which they are willing to execute it."

As to Section 2, I would suggest the addition of the following:

"When criticism of any work becomes necessary the criticism should always be explicit and with a plain statement of the engineering reasons for the criticism."

The code, as a whole, appears to cover the needs of the case in a very satisfactory manner and should command the adherence of the profession. Very truly yours,

LEWIS SANDERS.

The secretary read a published communication from William Griffith, of Scranton, Pa., a member of the section, regarding the present conditions of coal mining in Alaska. On motion, duly seconded, Mr. Griffith's letter accompanying this communication was ordered incorporated in the minutes of the meeting, and the secretary instructed to prepare an exhaustive abstract of the communication for incorporation in the minutes.

Mr. Griffith's letter is as follows:

Scranton, Pa., Sept. 16, 1911.

Mr. F. Lynwood Garrison, Secretary:

I am in receipt of your notification of the meeting of the Philadelphia section on Sept. 19. It will be impossible for me to be present, but the subject that you have before you for that evening is one of great interest to me. I have upon two occasions visited the Matanuska valley in Alaska—in 1905 and in 1908.

According to my conservative notions as to what kind of coal beds are minable and what are not minable at the present time, the largest estimate that I could report to my clients as at present available for that valley was 30,000,000 tons of ordinary bituminous coal, and 50,000,000 tons of high-grade semi-bituminous, comparable to the Pocahontas or New River coals as to chemical quality. It was with considerable surprise, therefore, that I noted some time ago the outrageously exaggerated reports contained in newspaper and magazine articles regarding the quantities and values of Alaska coals. At that time I prepared an article for publication on this subject, which was printed in one or two papers, and I am sending it to you now, thinking that possibly it may be of some use to you in connection with your meeting on the 19th. It is prepared, of course, from the view point of the present practice as to coal mining economics. The

Geological Survey, of course, make their estimates from a different viewpoint. They include all of the coal contained in the ground, 1,700 or 1,800 tons per foot-acre, on the basis that they are estimating not only for the present, but for all time, and that there may come a time in the future when the improvements in the arts and sciences may be such that all the coal, good and bad, can be mined, no matter whether it is minable now or not. Yours truly,

WILLIAM GRIFFITH.

The abstract of Mr. Griffith's communication, which is entitled "The High Grade Coals of Alaska," is as follows:

As engineer and geologist, I have had opportunities on two occasions to study and report upon the economic conditions affecting the coal resources of one of the principal coal fields of Alaska. It is evident from my observations that the people of the United States are being taught erroneous and extravagant notions regarding the economic value and extent of these fields. Therefore I deem it a patriotic duty to make the following plain statement of the geological conditions as I found them, which control the economic value of these much talked of coal areas.

In common with all the coals of the Pacific Coast, those of Alaska occur among rocks of comparatively recent geological age, and are of a grade usually designated as lignites, although there are considerable areas of bituminous and semi-bituminous coals of variable character and quality. On the whole, so undesirable are the coals of the Pacific Coast for high-grade purposes that the United States Government finds it necessary to transport from Pennsylvania and West Virginia the fine steaming coals of those states to supply the naval coaling stations on the Pacific Coast. There is practically at present no high-grade coal available for this purpose on our western seaboard.

The best coal areas of Alaska are of comparatively small extent, and are confined to two fields, known as the Matanuska field and the Katalla, or Behring River field. The former contains bituminous and semi-bituminous coking coals, with some anthracite, and is located 200 miles northwest of the Katalla field, which latter is situated near the coast of Controller Bay, about 100 miles southeast of Valdez. The Katalla field contains some anthracite in its eastern portion; its western section may be classed with semi-bituminous. The combined areas of the two fields is 100 to 200 square miles. Notwithstanding this considerable superficial extent, their actual content of commercial and minable coal, as of present-day practice, is apparently limited; the wildly exaggerated statements which have been made of the quantities of this high-grade fuel are probably due to lack of correct information as is also the resulting erroneous presumption that the mode of occurrence and condition of the beds is similar to the eastern coal fields of the United States.

In Pennsylvania, West Virginia and Ohio, the coal beds usually occur horizontally, or approximately so. Each superficial acre therein may consequently be expected, with a reasonable degree of certainty, to carry all the coal beds in the measures of that particular district, and therefore a similar extent of coal field in the eastern part of the United States may confidently be expected to contain a tremendous quantity of minable coal. Such is not true, however, of these important Alaskan coal fields, for, as will be shown later, from 50 to 75 per cent or more of the superficial area of the region probably contains no minable coal whatever, because the structural geology has been so affected by adjacent igneous rocks as to be much contorted, twisted and folded on account of the quakings and serious



disturbances which, as everyone knows, are common to volcanic districts everywhere. The adjacent coal beds are therefore much disturbed, and instead of being deposited in regular basins are usually found existing in monoclinial form, with steep dips, nearly vertical oftentimes. The contained coal is much crushed by the tremendous rock pressures, and such beds are very uncertain as to extent and continuity, moreover are frequently interrupted by dikes or intrusions of lava. *They also carry much dangerous mine gas.*

These irregularities render the extraction of the coal very expensive, and the available quantity in a given extent of bed exceedingly uncertain, much less per unit of volume than in the undisturbed eastern coal fields. Again, the geologist finds his study of Alaskan coals very difficult and uncertain on account of the thick mat of Alaska moss which covers the entire surface, except at points where rock exposures are caused by the eroding action of streams. He is, moreover, further hampered by the lack of key rocks, or absence of similitude in the strike, dip, intercalated slates of the coal beds; the dissimilarity of the overlying and underlying rocks, and the sequence of stratification, thus render identification of the seams at different localities practically impossible. The prospecting and exploration of the coal beds is therefore very difficult, and at the present time has not progressed sufficiently to warrant reliable estimates. Indeed, the exposures and data from which to draw conclusions as to quantities are very meagre, and therefore, in my opinion, at the present time no well qualified, careful estimator could place the quantity of commercially minable coal in these two fields beyond possibly 300,000,000 tons; and even this may be far too much. Thus the total amount of high-grade coal in these Alaska fields, instead of being, as has been often stated, far beyond the content of the Pennsylvania coal fields, is only about one two-thousandth part of the commercial tonnage now estimated to be contained in the anthracite fields alone, to say nothing of the great additional quantities of bituminous coal in that state. Pennsylvania alone actually produces nearly if not quite as much coal every year as the combined content of these two Alaska fields.

As an offset, in a measure, of the above related conditions unfavorable to economical mining, these fields are still but partially explored, and future search may lead to the discovery of additional coal areas now unknown. Throughout Alaska and the western states prospecting is usually done by people who are more familiar with metal than coal mining, and who are accustomed to expect great values from comparatively small areas or volumes of ore. With coal, on the contrary, great value means large quantities, and the latter requires extensive and expensive mining development both inside and out of the mines, and railroad transportation must be provided. Reasonable profits at coal mining require large production, and therefore until the underground exploration of the beds has proceeded far enough, from the coal miner's point of view, to develop the habits of the beds at lower depths, with respect to their continuity, regularity and folded or crushed condition, in order to determine the probable economic yield of a given coal bed, the great outlay of money required for land acquisition and outside mining improvements should be considered a hazardous expenditure by the careful investor.

In view of the foregoing, I should say that two million tons per year is a liberal average to expect from these two coal areas, and even at the exceedingly high royalty that has been mentioned in the press (50 cents per ton) would have an annual value of about a million dollars, which might perhaps continue for a hundred years. At four per cent, the present worth of such an annuity is approximately \$25,000,000, without considering the deductions usually made to cover the ordinary uncertainties of mining.

Therefore, in my view, the fabulous value recently assigned to these Alaska fields is simply the utterance of words without knowledge.

Our present laws and regulations have evidently been formed through a misconception of the conditions, as well as the absolute necessities, of Alaska; consequently, instead of being today a benefit to the progress of that rich territory, they are an actual detriment. What Alaska needs for its development, more than anything else, is transportation. The construction of railroads in Alaska means the introduction of labor-saving machinery, cheaper food and materials, more and cheaper labor, and a general amelioration of the stern conditions which now prevail. Capital is abundant, ready and anxious, but the building and operation of railroads requires coal as well as dollars. The prime necessity of Alaska, therefore, with respect to railroad construction, is an opportunity simply to utilize some of its dormant coal reserve, not necessarily the best of it, but the lower grades, in fact any coal will answer where none is now available. At present all Alaska coal lands have been withdrawn from entry, although the coal is fairly abundant and well distributed throughout this vast territory, but today no man may legally mine it, and in some parts of the territory timber is being rapidly exhausted for fuel purposes, owing to the lack of any other fuel.

Conservation without utilization is a wrong idea and a sprag to progress. Most of the Alaska claimants are after the best coal, and consequently, with the proverbial wastefulness of the American people, the present aspect of the coal situation points towards a speedy consumption of the small amount of high-grade Alaskan coal and a discarding of the more plentiful supply of medium and low-grade fuels.

It is to be hoped Congress will enact new laws for the control of this question only after having obtained a full knowledge of the situation, and if it is proposed to control the coal industry of Alaska through some sort of leasehold arrangement, let us, in all reason, have a high royalty for the relatively small quantity of high-grade coals and a lower rate for the medium and lower grades, thus arranging the royalties on a kind of sliding scale, proportionate to the percentage of fixed carbon contained in the coal; or some similar plan which will force the conservation of the valuable high-grade navy fuels and concentrate mining for commercial purposes on the lower grades.

The terms of office of the Chairman and Secretary, Messrs. Sanders and Garrison, respectively, having expired by limitation, the same were on motion, duly seconded, re-elected for the ensuing year.

There being no further business, the meeting adjourned at 11 p. m., to meet at the Engineers' Club, 1317 Spruce St., Philadelphia, on Oct. 3, 1911, at 8 p. m.

F. LYNWOOD GARRISON,  
*Secretary of Section.*

## PERSONALS.

John M. Boutwell, consulting geologist for Phelps, Dodge & Co., has finished a detailed survey of the mining geology of the property of the Moctezuma Copper Company at Pilares de Nacozari, Sonora, Mexico.

G. H. Clevenger has been promoted to be associate professor of metallurgy at Stanford University.



R. W. Brock, director of the Geological Survey Branch of the Canadian Department of Mines is visiting the new silver-lead camp in the vicinity of Hazelton, B. C. He will later visit the Portland Canal district.

Edward L. Dufourcq has returned to New York from California and Mexico.

Seely W. Mudd has been in Mohave County, Arizona, on professional work.

William Fleet Robertson, provincial mineralogist, returned to Victoria on Sept. 3, after having done two months' field work in the district about Hazelton, in the Skeena River district.

Frederick F. Sharpless recently returned to New York from a visit to Alaska and British Columbia. He is now in Durango, Mexico, where he will remain for about two months.

George Otis Smith, director of the U. S. Geological Survey, recently visited Spokane, Wash., and later went to Lake Wenatchee, Wash., where he inspected the work of the federal topographical survey party which is making a reservoir and river survey at that point.

J. B. Tyrrell, mining engineer of Toronto, has returned from a short visit to London, England.

Walter Harvey Weed has been appointed consulting engineer in active charge of operations of the Interstate Silver-Lead Mining Company, at Wallace, Idaho.

The following members of the Society have been appointed by President Taft delegates at large to the American Mining Congress: J. A. Holmes, J. Parke Channing, W. R. Ingalls, George S. Rice and George Otis Smith.

## MEMBERS ELECTED IN SEPTEMBER, 1911

Mein, William Wallace..... Mills Bldg., San Francisco, Cal.  
Consulting Mining Engineer.

Mercer, John W.....15 Broad St., New York  
Mine Manager.

Read, Thomas Thornton....420 Market St., San Francisco, Cal.  
Associate Editor, *Mining and Scientific Press*.

Shaw, Silas Frederick.....821 Central Bldg., Los Angeles, Cal.  
Mining Engineer.

## CHANGES OF ADDRESS.

Lindsley, Halstead.....Silver Centre, Ont., Can.  
Mgr., Wettlaufer-Lorrain Silver Mines, Ltd.

Stonestreet, G. D.....Haileybury, Ont., Can.

Waterman, Douglas.....Jocoro, Salvador, C. A.  
Mgr., Gigante Mining Co.



## CONSTITUTION.

*Amended, Oct. 4, 1911.*

### 1—NAME.

The name of the association shall be MINING AND METALLURGICAL SOCIETY OF AMERICA.

### 2—OBJECTS.

The society shall have for its objects the conservation of mineral resources, the advancement of mining and metallurgical industries, the better protection of mine investors and mine workers, the increase of scientific knowledge, and the encouragement of high professional ideals and ethics.

### 3—MEMBERSHIP.

The society shall comprise honorary members, and members who must be qualified by knowledge, experience, and honorable standing to advance the objects of the society, and shall be proposed for, and elected to, membership as provided in the by-laws of the society.

### 4—MEMBERS.

All interests in the property of the society of persons resigning, or otherwise ceasing to be members, shall vest in the society. No member or officer shall receive salary, compensation, or emolument unless authorized by the by-laws, or by concurring vote of two-thirds of the executive council. Members residing for a year or more beyond the limits of the United States, Canada and Mexico, shall not be entitled to vote nor to hold office during the period of such residence.

### 5—OFFICERS.

The affairs of the Society, subject to the provisions of the constitution and by-laws, shall be managed by a council of fifteen members, who shall hold office for the prescribed term or terms. The executive officers of the Society shall be a president, a vice-president, and a secretary (who shall also be treasurer), which officers shall be members of the council ex-officio, and shall hold office for one year, or until the close of the meeting at which their successors in office are elected, except that the secretary shall

hold office until his successor accepts transfer of the duties of that office. Additional officers may be elected by the council from time to time if necessary for the purposes of the Society. All officers shall be eligible for re-election. Vacancy in the office of president shall be filled by the vice-president, who shall then become president, and the council shall forthwith elect a vice-president; and if necessary shall elect a member of council, of which the number must always be fifteen.

### 6—ANNUAL MEETING.

The annual meeting of the society shall be held on the second Tuesday in January of each year. One-third of the members, present in person or by proxy, shall constitute a quorum for the transaction of business.

### 7—RULES.

The society may adopt by-laws, rules and regulations for the conduct of its business, provided that these are in harmony with this constitution, and may provide different methods for amending or repealing such by-laws, rules and regulations.

### 8—AMENDMENTS.

Amendments to the constitution may be presented at a regular or business meeting of the society; and if endorsed by the council, or in writing signed by at least twenty members, a copy of such proposed amendment shall be sent to all entitled to vote, accompanied by comment by the council if it so elects, at least thirty days in advance of a second meeting called for its consideration; at which meeting the amendment may be amended as to wording but not as to intent, and then shall be submitted to a final vote by sealed letter ballot sent to all members; the polls shall be open for sixty days, and for the adoption of the amendment a majority of those entitled to vote shall be required to have been recorded in the affirmative; provided, however, that a negative vote comprising a majority of the votes cast shall defeat the amendment. If the necessary vote for adoption or for rejection is not secured on the first ballot, the council shall order the sending of a second ballot by registered mail to members who have not recorded their vote; and in such case, so many of these second ballots as have been received by members, if not voted within a further period of sixty days shall be counted as votes cast in the affirmative. The ballots shall be voted, canvassed and announced as provided in the by-laws.

## BY-LAWS.

*Amended Sept. 5 and Oct. 4, 1911.*

### I—ADMISSION TO MEMBERSHIP.

A candidate for membership or two members proposing him shall submit, in such form and in such detail as may be prescribed in the rules and regulations of the council, a record of his training and practice. The candidate must have had eight years' practical or professional experience, including not less than five years in positions of responsibility in mining or allied lines of work. Graduates of approved engineering schools shall be credited with one-half the time prescribed for graduation. The candidate must be endorsed by three or more members who shall further certify in writing as to his qualifications for membership. These statements must be based on long or intimate personal knowledge, and shall be submitted in such manner as the council may direct. The names of the candidates, after approval by a duly appointed committee of the council, shall be submitted to all members of the society entitled to vote, with the request that said members of the society present in writing, promptly, any objections that they may have against a candidate on the list. Thirty days after the mailing of the list, the committee of the council shall consider the communications received from members of the Society, and with the approval of the committee, the secretary of the Society shall then submit the name of the candidate to the whole council for secret letter ballot. The affirmative votes of a majority of the council shall be required to elect, but three adverse votes, received within thirty days, shall be sufficient to defer the election of any candidate, and the council may include the name of any such candidate on the ballot for any subsequent election of members. The application of any candidate shall be considered as pending unless it be withdrawn, or unless by a majority vote of the council the candidate be rejected. A candidate may renew his application a year or more after his rejection.

### 2—ADMISSION TO HONORARY MEMBERSHIP.

Honorary members, not to exceed ten in number, must be proposed in writing, setting forth at length the qualifications of the candidate, and signed by at least twenty members of the society. The candidate must be elected by vote of the council which shall be by sealed letter ballot. One dissenting vote shall defeat such election. Honorary members are not entitled to vote nor to hold office and shall not be required to pay initiation fees nor annual dues.



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### 3—SUBSCRIPTION TO CONSTITUTION AND BY-LAWS.

All elected candidates shall be duly notified, and shall subscribe to the constitution and by-laws in such form as the council may direct. This latter provision shall not apply to honorary members. The membership of any person shall date from the day of his election.

### 4—INITIATION FEE.

There shall be an initiation fee of twenty-five dollars for each new member after the total membership shall have reached two hundred and fifty.

### 5—ANNUAL DUES AND LIFE MEMBERSHIP.

The annual dues shall be ten dollars, payable in advance on the first day of January of each year. Persons elected after nine months of any year have expired shall pay only one-half of the dues for that year. The council may, for sufficient cause, remit the whole or part of dues in arrears. The executive committee of the council may drop from membership any member more than one year in arrears for annual dues, but may reinstate such member at its discretion. The council shall permit any member, not in arrears, to become a life member on payment of a sum deemed adequate for the purpose by the council, and based on his expectation of life according to reliable tables of mortality. Such life membership and initiation fees shall be invested, and the income only shall be applied to the current expenses of the Society.

### 6—RESIGNATIONS.

Any member, not in arrears in payment of dues, may terminate his connection with the society by sending his resignation in writing to the secretary.

### 7—DISCIPLINE.

The membership of any person in the society may be suspended or terminated for reasons of weight by a four-fifths vote of the executive council. Notice of such intended action shall be sent to such member by registered mail, and action shall not be taken for at least thirty days after the receipt of this notice by such member. A member suspended or expelled may demand a sealed letter ballot sustaining the action of the council. This ballot shall be sent to all members entitled to vote and may be accompanied by a statement signed by the council or a committee thereof, and by a statement on behalf of the accused of not more than one thousand

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words, or not exceeding in length that prepared by or for the council. A majority of the votes received within thirty days shall be required to reverse the action of the council.

### 8—ELECTION DISTRICTS.

The council shall from time to time divide the territory occupied by the membership into twelve geographical districts to be designated by numbers. Each of the districts shall be, as nearly as practicable, contiguous territory; and each shall contain as nearly as practicable an equal number of members. The council shall announce such division to the Society three months before the annual meeting. The council shall consist of the president, the vice-president and the secretary; and of twelve members, elected one from each district, and the terms of office of such twelve councillors shall be arranged so that four of them shall expire each year.

### 9—OFFICERS.

The officers of the Society, as provided in the constitution, shall be elected as hereinafter provided, except that whenever a vacancy occurs it shall be filled by a majority vote of the council. Their respective terms of office shall begin at the close of the meeting at which they are elected. The duties of the several officers shall be such as usually attach to the office, or such as may be determined by the council. The council may delegate its powers to persons or committees, and may make such rules and regulations as may be necessary for the proper conduct of the business of the Society, provided that these are in harmony with the constitution and by-laws.

### 10—COUNCILLORS.

The term of office of a councillor shall begin immediately upon election. Vacancies occurring at any time in the council may be filled until the next annual election by a majority vote of the remaining members. At the next annual election new councillors shall be elected to fill such vacancies for the unexpired term of office only.

### 11—NOMINATIONS.

Three months before the annual meeting, the secretary shall send a nomination ballot to each member of the Society in the districts for which new councillors must be elected, with the request that he shall nominate three members, in such manner

as the council may direct, as candidates for councillor to represent his district; and shall send a nomination ballot to each member of the Society entitled to vote, with the request that he shall nominate one member for president, one for vice-president and one for secretary. Nominations shall be received for twenty days, when the polls shall be closed. Sixty days before the annual meeting the secretary shall prepare a ballot, containing in and for each of these districts not less than three names, and for the offices of president, vice-president and secretary, each, not less than three names, which shall be in each case those receiving the largest number of nominating votes before the closing of the polls. This ballot shall be mailed to each member of the Society entitled to vote, who may vote for one councillor in each district, having the right to substitute names not on the list, and to cast not over three votes for a single candidate, provided that the total number of votes cast by such member shall not exceed the total number of vacancies to be filled; and who may cast one vote for president, vice-president and secretary, respectively, having the right to substitute names not on the list. The ballot shall be signed, sealed and voted as prescribed in by-law 16.

### 12—CANVASSING BALLOTS FOR COUNCILLORS.

At noon of the first day of the annual meeting the polls shall be closed and the ballots counted by two tellers appointed by the president. Councillors shall not be eligible for such appointment. The candidate for councillor in each district, and the candidate for the respective elective offices, receiving the largest number of votes, shall be elected. In case of a tie the president shall cast the deciding vote.

### 13—MEETINGS OF COUNCIL.

Meetings of the council for the transaction of business may be called at any time by the president, and shall be called at the request in writing of three councillors. Unless for reasons of weight, at least ten days' notice of meetings shall be given. Five councillors, present in person or by proxy, shall constitute a quorum. A letter ballot of the council shall be taken on any question of importance, if so ordered by the presiding officer at any meeting, or at the request in writing of three councillors. Whenever a letter ballot of the council be taken, a majority vote of the council shall be required to pass the motion put to ballot, except that letter ballots upon candidates for admission to membership shall be decided as provided in by-law 1.



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### 14—MEETINGS OF THE SOCIETY.

The council shall provide for regular stated meetings of the society, for the transaction of business, or for the reading or discussion of papers, to be held at such times and places as may best serve the interests of the society. Special meetings of the society, or of any section thereof, for a definite purpose, may be called by the president, or shall be called on a request in writing signed by twenty members. It shall not be in order at a special meeting to transact other business than that stated in the call for the meeting. Except for reasons of weight, at least thirty days' notice shall be given of all meetings. Except at annual meetings, ten members present in person or by proxy shall constitute a quorum. Resolutions endorsing or condemning matters of public or professional interest shall take such course as may be prescribed by the council in duly formulated rules, but such rules must provide that not less than thirty days be allowed for any ballot of the membership of the Society.

### 15—LOCAL OR PROFESSIONAL SECTIONS.

Local sections, or professional groups of members of the society, may be organized for social, scientific and professional purposes, in harmony with the constitution and by-laws, and such sections shall have only such powers, and shall act under such rules and regulations, as the council may from time to time approve.

### 16—SEALED LETTER BALLOTS.

When sealed letter ballots are required by the constitution or by-laws, the envelope to contain the ballot shall be so designed that it can be signed on the outside by the voter for identification, and can afterward be opened by the tellers so as to preserve the secrecy of the ballot. The endorsement may take the form of a proxy, to be voted by the tellers appointed by the president, or by such other person, not a councillor, as the member may designate. The ballots signed and sealed shall be mailed or delivered to the secretary, who shall be responsible for their safe-keeping, and who shall endorse thereon the date and time of receipt and make record of such receipt on a list of members kept for the purpose. Any member shall have the privilege, at any time before the closing of the polls, of substituting another ballot, in which case the original shall be returned to him unopened. After the closing of the polls, the ballots, arranged in alphabetical order, with the check list of members above mentioned, shall be delivered by the secretary to tellers appointed by the president. The tellers shall verify the check list, and

open and mix thoroughly the votes in such manner as to preserve the secrecy of the ballot. The ballots after being counted by the tellers, shall be destroyed, and the report of the tellers shall be the official record of the vote. In case a supplementary ballot shall be ordered for members failing to vote on the first ballot, the members whose votes have been counted shall not be permitted to vote a second time nor to change their original vote. The result of the ballot shall be communicated to the members of the Society at such time and in such manner as the council shall determine.

### 17—VOTE OF CONFIDENCE.

The council, by a two-fifths vote of its members, or upon request in writing of twenty per cent. of the members of the society, shall submit any question to the membership for a vote of confidence. Such vote must be inaugurated within fifteen days after a motion for a vote of confidence has been passed; and the majority of votes received within thirty days after issuance of the ballot shall decide. The new council shall by lot divide themselves into three classes to serve until the next annual meeting and for one and two years thereafter respectively.

### 18—AMENDMENTS TO BY-LAWS.

Amendments to the by-laws shall take the course provided for amendments to the constitution, save that when the letter ballot is taken a majority of the votes received within thirty days shall pass or defeat such amendments.





# Mining and Metallurgical Society of America

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Vol. IV

November 1, 1911.

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## ANNOUNCEMENTS.

**Annual Meeting.**—The fourth annual meeting of the Society will be held at the Engineers' Club, in New York, on Jan. 9, 1912, beginning at 2 p. m.

**Committees.**—The President of the Society has appointed the following committees: *Mining Laws:* H. V. Winchell (chairman), C. W. Goodale and M. L. Requa. *Professional Ethics:* B. B. Lawrence (chairman), F. L. Garrison, R. A. F. Penrose, Jr. *Professional Training:* S. B. Christy (chairman), F. W. Bradley, A. L. Walker.

**The Alaska Coal Lands.**—This subject was discussed at the last meetings of the Philadelphia and San Francisco sections and subsequently Secretary Fisher, of the Department of the Interior, at the meeting of the American Mining Congress in Chicago at the end of October outlined the policy of the administration with respect to the coal situation in Alaska, this policy to be the development of those resources under lease. The adoption or rejection of this policy rests, of course, with Congress, but assuming that it will be adopted and that some legislation for carrying it out will be enacted at the forthcoming session, it is important that the legislation be drafted with good technical advice. This is something in which the Mining and Metallurgical Society can distinctly aid. Technical questions of the first order of importance are: (1) What limitation of time to leases should there be, (2) what area of coal land should an individual lessee be permitted to acquire; (3) should individual lessees be subsequently permitted to combine their interests; (4) what shall be the rate of royalty; (5) shall there be provision for readjustment of royalty from time to time; (6) what shall be the extent of governmental supervision over mining operations? There is no organized body of mining engineers in the United States so competent to give advice upon these questions, and others of similar nature, as the members of the Mining and Metallurgical Society. Members of the Society are requested to communicate to the Secretary their answers to the questions here propounded and to any other questions that they may deem to be of importance in this connection.

**Bureau of Mines.**—The chairman of the Committee on Mines and Mining of the House of Representatives has requested the advice of the Mining and Metallurgical Society in the preparation of a bill, for prompt submission to Congress, extending the functions of the Bureau of Mines in order to increase its usefulness to Western mining interests. This matter will be discussed at the meeting of the New York section on Tuesday, Nov. 14, and the executive committee of the council has requested the officers of the San Francisco and Philadelphia sections to call meetings of those sections for the discussion of this subject. The bill to be drafted by the Committee is to be presented in Congress early in next January, wherefore it may be impossible for the Mining and Metallurgical Society to take any formal action in the brief time that remains. However, the chairman considers that any discussion that may be developed upon this subject will be useful to him. All members of the Society are urgently requested to address communications to the Secretary of the Society outlining their views as to how the usefulness of the Bureau of Mines can and ought to be extended. Such communications are desired especially from members who are unable to attend the meetings of any of the local sections.

W. R. INGALLS,  
*Secretary.*

## MEETINGS OF SECTIONS.

### NEW YORK.

The October meeting of the New York section was held, after an informal dinner, at the Engineers' Club on Thursday, October 19, at 8.15 p. m. The meeting was called to order by the Chairman, G. C. Stone. Those present were: E. L. Dufourcq, L. D. Huntoon, C. Kirchhoff, H. H. Knox, B. B. Lawrence, T. H. Leggett, H. S. Munroe, R. Peele, W. A. Pomeroy, A. L. Queneau, A. H. Rogers, E. G. Spilsbury, G. C. Stone, A. L. Walker and W. H. Weed.

**The Chairman.**—As the minutes of the last meeting have been published in the Bulletin, unless there is some objection they will be accepted as published. (No objection.) If there is no new business we will proceed with the discussion of the proposed code of ethics. At the last meeting we finished paragraph 16, so this evening we start in with the third division.

17.—*Devotion, Diligence, Fidelity.*

**R. Peele.**—It seems that this paragraph is more or less a duplication of paragraph 14 above. It is under a different heading, but I do not see that there is much force in the distinction made.

**T. H. Leggett.**—It seems to me that this is one of those things which go without saying, and I move that paragraph 16 be omitted. Motion seconded by Mr. Rogers and carried.

18, 19.—*Confidential Relations.*

**A. H. Rogers.**—I think the two paragraphs as written express the idea that is desired to be conveyed very clearly, and I move that it be adopted.

**H. S. Munroe.**—I move to amend the paragraph by making the following addition: "When in the employ of a corporation it should be recognized that the engineer must at all times be faithful to the interests of the owners, i. e., the individual stockholders, and he should not take unfair advantage of them or betray their interests in any way."

**R. Peele.**—The engineer might be employed directly by the president or by an officer.

**E. G. Spilsbury.**—If employed merely in a personal manner he would have nothing to do with the corporation, but if employed officially under orders from the board of directors, or the representative of the board, I should say that he naturally represents all the stockholders. If loyal to one he is loyal to the other. I do not think that the engineer should have to define the honesty of the board of directors or of any of them.

**E. L. Dufourcq.**—If the engineer has to distinguish between the interest of the board, as distinguished from that of the stockholders, he must be in position to pass judgment on the honesty of the board.

**H. H. Knox.**—I think Professor Munroe seems to question the propriety of an engineer owning stock at all.

**A. H. Rogers.**—It seems to me that this paragraph covers the ground absolutely, and the fact that the engineer is likely to be a co-owner should be made the subject of a separate paragraph.



**B. B. Lawrence.**—I think that is the proper point of view. The Society ought to express itself very clearly on the question of an engineer owning stock. I think this is a real trouble in the profession. It is high time for us to say how far an engineer may go in the ownership of stock, and clearly to define his position. I move that this be made the subject of a separate paragraph.

**E. L. Dufourcq.**—I do not think that paragraph 19 is expressed clearly enough. An engineer becomes more valuable to his client in exact ratio with the amount of experience he has had in similar or related cases, and he is not under obligation to divulge all his knowledge to his new employer. His knowledge can, however, be of great value to him in properly advising his second employer.

**B. B. Lawrence.**—I move that this paragraph be approved in principle but not in form, and that it be referred back to the committee in order to bring out the ethical principle more clearly. Motion was seconded and carried.

A vote was here taken on Mr. Rogers' original motion, and carried.

**H. S. Munroe.**—I move then to insert as paragraph 20 the clause previously introduced as an amendment to 19.

**E. L. Dufourcq.**—Does this not suggest the possibility of an engineer having to determine who are the majority? In a great many cases there are two groups, and their interests are contrary. The board of directors may represent the majority or the minority interest. How is the engineer going to determine which interest is to be sacrificed. Professor Munroe says that when in the employ of a corporation he must respect the rights of the other stockholders. This is not specific enough. What is meant by the other stockholders? Does that presuppose that the board of directors is hostile to the other stockholders?

**H. S. Munroe.**—In such a case, the engineer, as in all ethical questions, has to act on his own sense of right and wrong.

**E. L. Dufourcq.**—I have in mind a combination recently proposed in Utah, in which the ownership of stock was rather evenly divided between the two companies which it was proposed to combine, and a valuation of the properties was to be made by both of the engineers. Whose rights were they to respect? To whom did they owe their loyalty? The employers were the controlling interests in both companies. I do not think we can

lay down a principle for the engineer to follow which will govern every case.

**R. Peele.**—It may not be known that a code or canon has been formulated by the Bar Association of America, another set of rules for the Bar Association of the State of New York, another for the County of New York, another for the Bar Association of New York City. A short time ago I was talking to a well known lawyer, who is one of a committee appointed to draw up a new code of ethics for the guidance of members of the last named association. They found that the old one, which was taken from the canon of the National Bar Association was too prolix, as it contained 48 paragraphs. That of the State of New York was finally reduced to 20 items, which this committee aims to boil down to a decalogue. My friend made the remark that he and his associates looked on the code of ethics chiefly as a means of bracing up the weaker members.

**E. G. Spilsbury.**—The American Institute of Consulting Engineers has a code of ethics, reduced to a decalogue. Theirs states simply what a man shall not do; the rules are all negative.

**H. S. Munroe.**—What I am trying to define here is the relation between the engineer personally, as far as his personal and individual interests are concerned as co-owner, and the other stockholders, as far as his interest may or may not conflict. In other words, should the engineer take advantage of his personal knowledge of underground conditions to buy or sell stock.

**H. H. Knox.**—I think the Society ought to discourage all holding of stock when making a report which is to be published.

**E. G. Spilsbury.**—I think if we left out the word "individual" before stockholder, it would be better.

**H. S. Munroe.**—I consider that the gist of the whole paragraph. It emphasizes the right of the individual, and not of the majority or the minority.

**E. G. Spilsbury.**—How is an engineer to know what the interests of the individual are? He knows the general policy of the company, but when you use the words "individual stockholder" there may be a number of them whose interests may be entirely different.

**H. S. Munroe.**—That is a question not of ethics but of facts. No one is likely to be in possession of all the facts.

**E. G. Spilsbury.**—An engineer employed to report on a property is not supposed to know what the individual interests of the other stockholders are or may be. That does not concern him.

**B. B. Lawrence.**—I am in favor of the principle that no engineer should be interested in the stock of a company which he examines. If he is interested, he is just as apt to lean backward in attempting to justify himself. Because he is interested he is apt to err.

**E. G. Spilsbury.**—I move as an amendment to Mr. Munroe's amendment that we strike out the word "individual." The motion was lost.

A vote was then taken on Mr. Munroe's amendment, and was carried.

**W. H. Weed.**—I move to insert the following paragraph: "No outside engineer shall make a report on a property in which he owns stock."

The motion was seconded and carried. The chairman thereupon called attention to the fact that the section had passed two paragraphs which absolutely contradict one another.

L. D. Huntoon moved that these paragraphs be referred to the committee, to be reconciled. Motion was carried.

#### 20.—*Expert Witness.*

B. B. Lawrence moved that this paragraph be stricken out. The motion was seconded by Mr. Spilsbury, and carried.

#### 21.—*Advisory Reports.*

On motion, seconded by Mr. Knox, it was voted that this paragraph be stricken out.

#### 22.—*Contingent Fees and Contingent Interests.*

R. Peele moved to strike out the last sentence. The motion was seconded by Mr. Lawrence.

**E. L. Dufourcq.**—I wish to call attention to the reprehensible practice of giving calls on stocks to an engineer before making an examination.



**R. Peele.**—In next to the last line, after the word "engineer," should be added, "and is therefore to be deprecated," or some equivalent expression.

**W. H. Weed.**—I move to refer the whole back for revision, and for bringing down to crisper and shorter sentences. The motion was seconded by Mr. Knox, and carried.

23.—*Expert Witness Contingent Fee.*

**E. G. Spilsbury** moved to amend this paragraph to read, "that it be prohibited as unprofessional." The motion was seconded and carried.

24.—*Duty to Warn.*

**B. B. Lawrence** moved that this paragraph be stricken out. The motion was seconded by Mr. Huntoon, and carried.

25.—*To Advise Adversely.*

**E. G. Spilsbury** moved that this paragraph be stricken out. The motion was carried.

26.—*To Assume Full Responsibility.*

**E. G. Spilsbury** moved to strike out all except the first sentence. The motion was seconded by Mr. Weed, and carried.

27.—*Estimates of Quantities.*

**W. H. Weed.**—I move that the heading of this paragraph be changed to Valuation.

**E. G. Spilsbury.**—I would suggest changing the phraseology and say, "that the engineer should state clearly" instead of "with sufficient clearness." I also move to strike out the last sentence after the word "based."

The two preceding motions were both carried.

28.—*Fees, How Determined.*

**H. S. Munroe** moved to retain the first three sentences and to strike out the rest. Motion was seconded by Mr. Spilsbury, and carried.

29.—*Controversies Over Fees.*

H. S. Munroe moved that this be stricken out. The motion was seconded by Mr. Lawrence, and carried.

**E. G. Spilsbury.**—Several things which are omitted in this code of ethics are covered somewhat in the code of ethics of the American Institute of Consulting Engineers, for example, the ethical relation of engineers to each other. This is brought out plainly in that code, which I suggest should be brought to the attention of the committee.

**H. S. Munroe.**—I would suggest that the whole matter be referred to the committee, to frame a code of ethics for the guidance of members of the Society, based upon the Philadelphia and other codes, and that the action of this meeting be taken as advisory and not as mandatory.

**B. B. Lawrence.**—Would it not be practical to discuss other codes at our meetings? I think that the committee should be further enlightened by open discussion of other codes, as established by other engineering professions.

**H. S. Munroe.**—I move that further discussion of other codes be arranged, and that the Secretary be requested to furnish extra copies. The motion was carried. The meeting then adjourned.

L. D. HUNTOON,  
*Secretary of Section.*

PHILADELPHIA.

Meeting of October 3, 1911.

A meeting of the Philadelphia section was held at the Engineers' Club, at 8 p. m., October 3. Members present: Hutchinson, Halberstadt, Conner, Griffith, Sanders, Chauvenet, Hixon, Garrison, Chance. One visitor, Mr. Mitchell Chance, attended. R. H. Sanders, Chairman, presided. Minutes of previous meeting, held September 19, were read and approved.

In response to the circular letter dated September 22, issued by the Secretary in compliance with the resolution passed at the previous meeting, a number of replies have been received from members, giving their views regarding a system of mining laws relating to the coal deposits of Alaska. These letters having been read by the Secretary, were ordered to be spread on the minutes of this meeting. They are as follows:

**Eli T. Conner.**—After carefully considering this matter, together with the excellent letter submitted at the last meeting of the Philadelphia section by William Griffith, of Scranton, Pa., supported by numerous conversations I have had with Mr. Griffith, I am of the opinion that as to the disposition and development of government coal lands in the territory of Alaska, final action by the government should be deferred until much more complete and definite knowledge of the geological and mining conditions, quality and marketability of the coal underlying government lands, shall have become available.

This information can be obtained only by the development of one or more operations on practical lines, and a very careful investigation of the remainder of the coal-bearing territory.

With this object in view, and considering the importance of supplying the needs of the territory with home produced fuel, at as early a date as possible, I think the suggestion made in the *Mining and Scientific Press* of September 16, 1911, entitled "A First Step in the Solution of the Alaskan Problem" is excellent. I can see no reason why the United States government could not undertake the work as therein outlined, entirely with the view of getting at the absolute facts, upon which intelligent, far-sighted policies may be based.

**S. H. Chauvenet.**—I am not prepared to go into a thorough discussion of this important subject on such short notice. However, I think the United States government should retain the ownership of all the coal and timber lands in Alaska, and that they should be worked under royalties by lessees. More important than the ownership of these lands by the government is the control of the transportation lines and their terminals. The government should own and operate all the railroads in Alaska, as well as all terminals. It should own and control all harbors, piers, etc., on the coast. Individuals would then have as fair a chance as corporations in developing their properties and shipping their product. If private individuals or corporations own the transportation lines and harbors, the most liberal mining laws would be of no benefit to any but those who controlled these transportation lines. The interstate commerce law has been of much more benefit to the railroads than to the shippers. Government supervision of the railroads would be of little more benefit to shippers than the present law. There are so many ways, other than freight rates, by which the owners of the railroads can oppress the shippers and manufacturers that we do not want to extend to Alaska the transportation monopoly from which we now suffer in the rest of the states.



**Benj. Smith Lyman.**—I beg to urge, in the first place, a thorough investigation of the liberal method adopted in Nova Scotia, encouraging to capitalists, profitable to the government and advantageous to all classes of the community. According to my somewhat imperfect recollection of almost fifty years ago, the coal, as well as other particularly valuable minerals, was retained in the ownership of the government, and was sought for under a right of search, and later mined under a lease. A right of search covers five square miles, requires the payment of a fee of \$20 and the results of the search must be reported to the government. At the end of a certain term (say a year) a square mile, or several square miles, may be selected for operation, and a mining lease for each mile may be obtained on payment of a fee of \$50. Under each lease, active operation and a yearly report, with a map of the underground workings, are required. The royalty to be paid was (if I remember rightly) 10c. a ton for excellent bituminous coal.

A similar method, with a royalty of one-half, or one-third, of one per cent. of the market value of the mineral, would be applicable to other minerals; but Nova Scotia experience in good mining might also be well worth examining.

**R. A. F. Penrose, Jr.**—Regarding some system for locating coal lands in Alaska, I would say that I believed that any system which is adopted should be as free and as untrammelled with restrictions as possible. The ordinary United States mining laws governing such subjects are excellently adapted to the conditions in Alaska. I am aware that the effect of these laws in many parts of the west has been much criticised, but I think that the unfortunate results which have often come from them have been due to the fact that they were not properly enforced. Where they have been properly enforced, I think that the laws have added greatly to the welfare of the western country.

The rapidity with which our whole western country has been developed and the extent to which it has thrived is largely due to the fact that the government has offered the full benefit of the mineral resources of that region to those who discovered them, without hampering them with royalties and other restrictions. This system encouraged individual enterprise, and the West grew as no other country on earth has ever grown before. Now, however, when it comes to Alaska's turn to be developed, there seems to be a disposition to impose royalties and other restrictions on coal fields, which are none too good in spite of the sensational reports to the contrary. Alaska is a slow country to develop anyhow; the people need coal more than in most coun-

tries, and yet it is proposed to put a tax on this coal, the benefit of which shall go to the people of the United States at large, and the burden of which shall fall on a few people who are struggling to live in a far off northern country.

Instead of imposing difficulties in the way of developing Alaska, I believe that the government should encourage its progress by making the development of its natural resources as easy and cheap as possible. I have no doubt that if Alaska is left alone, without undue interference, it will give a good account of itself, but if it is oppressed with restrictions, it is apt to stand still for many years.

I believe that this Society can do a great benefit if it can shield this new and struggling territory from experiments which might produce good results in some of the older and more fortunately situated states, but might be disastrous to Alaska in its present condition.

**A Member.**—I beg to offer the following suggestions: The coal lands to be leased and not sold.

The leases to be in tracts of 320 acres each and upwards, according to mining, topographic and geological conditions rather than geographical. Individuals or companies may acquire a lease to additional tracts, provided certain requirements are met.

Each prospective lessee, upon giving a bond for an amount equivalent to \$5 per acre, to be given a prospector's permit good for two years, with the right to enter upon the land and prospect and develop. If at the end of two years the prospector shall have spent at least \$5 per acre, he will be given the right to a lease to the tract in question for a period of 50 years, including sufficient surface rights for mining purposes.

No royalty should be exacted on coal extracted for two years. At the end of this period, the lessee shall either surrender his lease or else file bond for \$10,000, cancelling the bond filed originally, for faithful performance. The royalty should be 5c. per ton on each ton of clean coal extracted until 50 per cent. of the coal estimated to be in the tract has been extracted, and for each 10 per cent. additional extraction, there should be a reduction of 1c. per ton. (The purpose of this scheme of royalty is to encourage the lessee to conserve the coal.)

Transfer of lease to responsible party allowed if all obligations of the first lessee are assumed, but the government is to reserve the right to prevent transfers which will tend to create a monopoly. There shall be nothing in this regulation to allow a limited combination of lessees to secure economy in operation.

As mining regulations, I would suggest:

1. That proper plans of working shall be adopted and carried out.

2. That all reasonable precaution shall be taken for safety of life and limb.

3. A sickness, accident and death fund shall be established; one-third of which shall be contributed by the employee, one-third by the lessee, and one-third by the government. The employee to be assessed 1 per cent. per annum upon his earnings, a proportionate amount being deducted semi-monthly; an equal amount being put into the fund by the lessee and the government, respectively. Payments from this fund to be arranged upon an equitable basis.

(NOTE.—It is understood that this clause is merely suggestive, as it would be impossible to fix in definite figures or exact amounts without special consideration by those familiar with accident and health insurance.)

4. That every reasonable effort shall be made to mine the coal in workmanlike manner without loss of coal. On failure to carry out these regulations, after due notice has been given, the lease may be declared void.

In the event of failure continuously to occupy the land, or failure to get out at least 10,000 tons of coal per year, the lease may be declared void.

In the event of the lease becoming void, the government shall offer at public auction the improvements and the lease, all money received being applied first to the payment of debts.

In case of damage through negligence, a sufficient sum will be deducted from the balance to make the damage good. If any sum then remains, it shall go to the party whose lease has been vacated.

The amount of coal extracted and the amounts of money which may be due will be determined quarterly by the Government Mine Inspector of the district and the representative of the company. In case of dispute, a board of arbitration will be appointed to consist of five members, two nominated by the lessee, two government representatives, and a President, who shall be mutually agreed upon. In the failure to agree upon a fifth person, he will be designated by the Judge of the Territorial Court.

I believe in very liberal treatment for development of the lands by leasing to bona-fide miner or company. I also believe



in very moderate royalties. In the interest of safety and conservation, I have introduced several regulations and call particular attention to the feature of lessening the royalty for good extraction of the coal. I realize this is a somewhat complex matter to handle.

I am strongly of the opinion that in situations like Alaska, or as in any mountainous countries generally, that the land should be laid out in a way to conform both to topography and to the mining conditions. As you are aware, in many places the man who owns a thin strip of outcrop practically controls the situation. I think this is economically wrong.

It will be noted that this scheme does not require a large expenditure of money for lands, with the possibility that it will be a total loss to the company. On the other hand, I thoroughly believe in a long lease for the best development of the ground.

**A. L. Queneau.**—The coal lands would, in my judgment, be best developed by a system of long-term leases, say 25 years, renewable for one or more terms according to the tonnage left unmined.

In view of the large capital involved to develop coal lands for an economical production, a maximum area of six square miles (3840 acres) should be allowed for a single entry, the acreage to be in one continuous parcel, the ratio of the length to the width to be 4:1 as a maximum.

No person should be entitled to make more than one entry at any one time within the territory; a period of one year should lapse as a minimum between two entries of the same locator.

The locator should make the location and entry in person.

The leasehold on coal lands should cover the coal rights only.

All transactions covering the title to coal land leases should be filed with the Bureau of Mines. This would necessitate the reorganization of the Bureau of Mines in order to give it the required executive powers; these powers should be broad enough to cover also the technical details of actual mining, owing to the number of human lives that are endangered by careless mining.

The coal lands should be leased upon an annual rental of 25c. per acre for the first year with an increase of 25c. in rental per acre per year up to the maximum and fixed rental of \$1.00 per acre.

A minimum yearly tonnage per acre should be specified, the amount varying with the character of the coal and the general development of the field in which the lease is located, this at the discretion of the Bureau of Mines.

Failure to pay the rental or to mine the specified minimum tonnage within a specified time should entail the forfeiture of the lease.

**H. M. Chance.**—Recently has developed an apparently widespread conviction that the government should not part with the title to any of its lands underlain by coal, and as at this time it may be unprofitable and perhaps impracticable to advocate measures opposed to that belief, it may be useful to consider upon what terms the government may hope to lease such property, and whether leases will afford a satisfactory assurance for the investment necessary to open and develop mines.

Owing to the extraordinary risks attending the investment of capital in the development of Alaskan coal lands, due to the uncertainties that at present must be faced by those who may undertake to open and operate such mines, there may be great difficulty in inducing anyone to embark upon such an undertaking. Inducements more or less alluring will undoubtedly be necessary to attract the attention of capital and to interest those able successfully to carry out any such undertaking.

While I have no personal knowledge of these coal fields or of the physical conditions which will affect the cost of mining, a review of the market requirements for coal in regions tributary to the Pacific Coast, of the history of mining operations, past and present, on Vancouver Island, in Washington and in California and of the quite general and rapidly extending use of fuel oil, develops facts that do not impress one favorably and I should hesitate to advise anyone to enter upon a projected development either in Alaska or at any locality upon the Pacific Coast until full and absolute data were at hand demonstrating the possibility of marketing a sufficient quantity of coal at prices to net a satisfactory profit upon the capital proposed to be invested. If development is to be brought about through the opening of mines under lease, such leases must be most liberal as to terms, conditions and royalties and must be for long periods; the acreage and tonnage leased must be large enough to justify the undertaking.

In the bituminous and anthracite coal fields, leases are often made to include all the coal underlying the surface, the lease continuing in force until all the coal is mined. In some states such leases have been determined judicially to constitute a sale of the coal in fee, payment for the coal being made in instalments, as the coal is mined. In other cases, especially where the acreage leased is small, leases are made for 20, 30 or more years; few leases are made for as short a term as 10 or 15 years.

In the matter of royalties there is a wide divergence in the price per ton between average bituminous coals, coking coals and anthracite coal. For bituminous coal of average commercial grades, royalties range from 3c. per ton up to 15c. per ton, depending upon quality, thickness, location, depth, etc. Average royalties on coal of such grade may be taken at 7 to 10c. per ton. Bituminous coals of superior grade, of good thickness, and advantageously located, command royalties ranging from 10 to 18c. per ton, averaging between 10 and 12c. Coking coals command somewhat higher royalties, averaging perhaps from one-fourth to one-half more per ton than steam coals of corresponding grades. Upon anthracite coal (in Pennsylvania) mined under lease, the royalties depend largely upon the date at which the leases were made, and the price varies largely with the physical conditions, thickness, and quality of the coal, ranging from 15 to 50c. per ton and perhaps averaging (including small sizes) about 25c. per ton.

It might not be unwise, and to secure the development of the Alaskan coal fields under leaseholds it may be necessary, to grant leases conveying the right annually to mine a reasonably large tonnage without the payment of any royalty whatever. If it be thought that a revenue from this source should be obtained, a provision for a moderate royalty might be made operative upon tonnage in excess of a fixed free tonnage. This free tonnage would virtually be in lieu of a bonus.

As it is obviously to the interest of Alaska, of the Pacific Coast and of the United States government that these coal fields should be worked, this end might best be attained by making the tenure of title to each leasehold depend upon reasonably continuous operation, actual failure to operate for a certain period causing a forfeiture of the lease, but such a provision must naturally be one that can readily be complied with by any who are conducting their business in good faith.

I believe therefore that it will be good policy and that it also will be necessary to offer prospective operators most attractive terms if these coal fields are to be developed and operated under lease, that these terms should assure fixity of tenure for a long period of years, moderate or practically nominal royalty payments and an acreage large enough to insure satisfactory tonnage reserve.

Millions of tons of bituminous coal are annually mined in this country paying royalties of 6c. or less per ton. Excepting a few districts of limited area, coal in the ground is rarely appraised at a value of more than 1 or 2c. per ton. The prospect for large governmental revenue from such a source may there-



fore be dismissed as of small relative importance, as under the most favorable outcome of the development of these coal fields, it must be many years before such revenue could become a matter of national importance.

**R. H. Sanders.**—My suggestions are: The government to withdraw permanently 25 square miles of the Bering river coal-field that is underlain with smokeless steam coal. Open up this coal, build a railroad from the coal mine to safe landlocked harbor, with deep water, such as Orca. The government to mine this coal exclusively for government use.

Open to entry by citizens of the United States all other coal lands under the following conditions:

An individual, association, or company, may lease from the government by a perpetual lease tracts of lands of the following sizes, first by paying into the land office, internal revenue office or such other United States office as may be designated, the following rentals every year, and in addition the following royalties on coal mined; the rentals to be paid in advance on June 1 of each year, and royalties at the end of each year, on June 1:

Size of Tract.	Rental per Year.	Royalty per Ton.
40 to 40 acres.....	\$10	¼c.
40 to 160 acres.....	100	½c.
160 to 640 acres.....	200	1c.
640 to 2,660 acres.....	500	3c.
2,660 to 5,320 acres.....	1,000	6c.
Over 5,320 acres.....	5,000	6c.

The non-payment of the rent or royalties forfeits the lease.

If any leased tracts are combined directly or indirectly, then the rental and royalties to be paid are on the combined acreage; that is, if two 160-acre tracts are combined in one operation, the rental is \$500 a year with 2-c. royalties.

The areas taken up shall be laid out in squares with their sides north and south and east and west.

These royalties and rentals are to be put in a pension fund for Alaska miners.

**F. L. Garrison.**—In view of the fact that the publications of the U. S. Geological Survey contain the more recent, as well as the most voluminous statements relating to the Alaska coal fields, I deem it my duty, as Section Secretary, to make some reference to them. Alfred H. Brooks, Chief Geologist of the Survey, has published in U. S. G. S. Bulletin No. 442 an exhaustive review of the subject, and his appended bibliography of 106 separate titles shows that he has drawn from numerous reports and publi-

cations both government and private. It is therefore reasonable to conclude he is as familiar with the subject as it is possible for anyone to be in the present undeveloped and unexplored condition of Alaska. He sets forth in this document a number of important points to which I will venture to draw attention.

It has been well established that much of the coal of Alaska, as of many if not most of the fields on the North American Pacific seaboard, are of Tertiary age, which is usually a synonymous term with inferiority as compared with Pennsylvania and Welsh coal. An exception, according to Brooks, are those fields near Cape Lisburne on the Arctic ocean, which are a high-grade bituminous character and are contained in the Lower Carboniferous rocks. The Matanuska field appears to be both Eocene and Jurassic, while the Bering river field is largely Eocene and probably some Miocene. The Jurassic coals of the Matanuska area are largely lignitic. Brooks states that about half the known tonnage of the Alaskan coal is lignite; a little over one-fifth anthracite and high-grade bituminous, while the remainder lies between the bituminous and semi-bituminous classes. The anthracite of the Bering and Matanuska fields is nearly or quite as good in composition as that of Pennsylvania, but the rocks in which it occurs have undergone such tremendous deformation it is highly probable the yield of slack and waste in mining this coal will be excessive, if indeed the coal is not wholly unmineable under present economic conditions. Brooks states that the coals classed as semi-anthracite are similar to those of the Bernice basin of Pennsylvania. The high-grade bituminous coal of the Bering River and Matanuska fields compares favorably in composition and heating power with those of Georges' creek, New River and Pocohantas, of Pennsylvania and West Virginia. The amount of slack produced in mining the semi-anthracites of these fields in Alaska will, however, be large for the reason previously stated, but as these coals have fair coking qualities the economic loss from this condition will not be as great as in the case of the anthracites.

The lower-grade Alaska coals, which constitute by far the great bulk, compare favorably in composition with those of Japan, Vancouver's Island, Washington and Australia.

Much has been said of late in the public prints regarding the enormous area of coal land in Alaska. The United States geologists (p. 54, Bull. 442) estimate there are in that territory 12,667 square miles supposed to be underlain by coal-bearing rocks, about 10 per cent. of which, or 1202 square miles, are believed to be underlain by workable coal. Mr. Brooks states that the following estimates of Alaska's coal resources, expressed in

tonnage, were prepared for the Conservation Commission, and that, although these figures are of some value to the economist, inasmuch as they serve to indicate the minimum quantity of fuel which Alaska can furnish, yet they do not show the ultimate coal resources of the territory. He then goes on to qualify this statement with the remark:

Of the 1,202 square miles classed as coal land, less than one-quarter has been surveyed in sufficient detail to yield any quantitative data whatever. Even where such surveys have been made, a large factor of uncertainty is introduced either by the folded and faulted condition of the coal beds or by the lack of definite knowledge regarding sequence of strata. There must, therefore, be a very large element of uncertainty in the tonnage estimates for even the 300 to 400 square miles of surveyed coal fields. Moreover, in Alaska there are almost no data available from private sources, such as the results of extensive mining or prospecting operations, which form an important element in the estimates made of the coal resources of the States.

The system of computation used by the government geologists included no beds less than 3 ft. thick, and assumes workability to be limited to 3,000 ft. in depth for high-grade fuel, 2,000 ft. for medium and 1,000 ft. for the inferior grades and lignite. The tonnage computations are based on the following factors:

The tonnage was computed by the formula: Tonnage equals area of bed to limit of workability (square miles) X thickness (inches) X specific gravity X 72,600.

The specific gravity was assumed to be 1.30 for lignite, 1.35 for bituminous, and 1.38 for the high-grade coals.

The results obtained by these calculations are rather startling, and total 3,621,400,000 short tons of high-grade, 11,483,100,000 of low, or a grand total of 15,104,500,000 tons of all grades. Mr. Brooks intimates that such figures indicate an average of 20,000 tons to the acre, and explains that the coal estimates of the federal geologists will usually exceed those made by the mining engineer for private interests. The reason for this lies in the fact that the geologist includes in his estimate all the coal beds of a certain thickness and to a certain depth, for it is his purpose to present figures which shall approximate at least the ultimate coal resources of the district under examination. The mining engineer, on the other hand, is not interested in the ultimate coal recovery, but is charged with the duty of estimating the quantity of coal which is either immediately available or can be mined under conditions that will soon arrive. For example, a number of engineers have roughly approximated the coal of the Bering river field at 500,000,000 tons, and these figures have been widely quoted. This estimate, however, includes only the coal lying above water level which can be mined without hoisting. The tonnage estimate of the Geological Survey is many times this figure, because it includes all the coal lying within 3,000 ft. of the surface. It should therefore be borne in mind that the two



classes of estimates are made with very different purposes and do not admit of direct comparison.

Coming to specific instances he finds that in the Bering river field the workable beds are from 3 to 25 ft. thick. In quality the coals vary from an anthracite with 84 per cent. fixed carbon to semi-bituminous with 74 per cent fixed carbon. The field also includes some coking coal. The beds in many places are greatly crushed by deformation. The surveyed portion of this field covers about 22 square miles underlaid by anthracite and about 28 miles by semi-bituminous or semi-anthracite, that is, 50 square miles in all. It seems probable that the area of this field is in fact much greater than these figures would indicate, but until more accurate surveys are made it is not expedient to exceed this estimate.

The Matanuska field shares with the Bering River pre-eminence as to location and quality.

The bituminous coal, which seems to form the main body, appears to pass into a lignite at the west end of the field, while there is some evidence that the same coal is represented by an anthracite near the east end of the belt of Tertiary rocks. The anthracite may, however, belong to the older coal-bearing formation.

The commercial coals of the Matanuska field vary from a sub-bituminous to a semi-bituminous, and there is also some anthracite, but of this less is known. It is evident from the facts in hand that there is a large amount of high-grade bituminous coal in this district. The beds vary from 5 to 30 ft. thick.

So far as at present known, the total area underlain by commercial seams aggregates 46.5 square miles. As much of the field is covered, however, and as it has not been surveyed in detail, the coal-bearing area is probably much larger. The total area of what may prove to be coal-bearing rock is approximated at 900 square miles.

On page 80, Mr. Brooks makes the following statement:

Few tonnage estimates have been made on the Bering river and Matanuska coal fields, but the best information available indicates that these lands will yield between 10,000 and 100,000 tons to the acre. This means that some of the lands will yield only 10,000 tons of coal to the acre; others may yield as much as 100,000 tons. Multiplying this acre tonnage by half a cent (the estimated value of the coal in the ground) indicates that these lands are worth from \$50 to \$500 an acre. Such values are far above the average of the bituminous coal lands in the United States. Although the lands containing the coking coals of Pennsylvania have sold for \$800 to \$2,000 an acre, in the other Appalachian fields the average values are \$10 to \$386, in the central fields \$10 to \$200, and in the Rocky Mountain fields \$10 to \$500. It is evident, therefore, that the valuation of half a cent a ton for coal in the ground, far from being too low, is higher than the average in the States, and it is at least an open question whether purchasers at this rate could be found.

It must be admitted that these estimates, and the factors upon which they are based, will not impress the average mining engineer who has had much experience in coal mining, as either

conservative or well-considered. It is certainly far from our desire to question needlessly the conclusions of the government geologists; on the contrary we wish to coöperate with them in every possible way to determine the truth. But it is difficult to accept the foregoing deductions, although we must admit the federal geologists ought to know more about the subject than those of us who have not been upon any of the Alaskan coal fields. The truth is that the geologic facts as found by the Survey, and which will probably not be disputed, do not justify the conclusions drawn from them. More than a half-century of practical experience in the developed coal regions of this and other countries indicates quite different and less hopeful results. It is true the rapid development of the gas engine will render the great bulk of the poorer grades of Alaska coal more valuable than when used for steam purposes, since it has been repeatedly shown that as a source of gas lignite occupies a very respectable position when compared with high-grade fuels, and that in the future its value is certain to enhance more rapidly than were its use restricted to steam generation.

Speaking for myself, I believe the American public wish to know the whole truth regarding the value of our Alaskan coals; they desire them conserved as they do every other natural resource, but they don't want humbug, nor to be led into the erroneous belief that we have in Alaska vastly more coal than our present knowledge of the subject justifies us to assume, and that a few million acres more or less is of no consequence. The problem is of great importance to the nation, and should be studied without further delay by a commission of mining engineers affiliated neither with the government nor with private interests now known to be identified with Alaska.

Dr. H. S. Drinker, President of Lehigh University, sent in response to the resolution adopted at the Sept. 19 meeting, his address at the exercises commemorating the twenty-fifth anniversary of the Michigan College of Mines, at Houghton, Mich., August 8, 1911, entitled "The Contribution of the Mining Profession to the Conservation of our Natural Resources." As this admirable address has been published and extensively circulated, besides being reprinted in the Congressional Record of August 15, 1911, p. 4123, it was deemed by the meeting unnecessary to reprint the same in the Bulletin. The Secretary was instructed to make note of this circumstance and record it for reference, so that anyone sufficiently interested may look it up for himself.

A general discussion followed in which Mr. Griffith gave some interesting statements regarding the Alaska coal situation. He pertinently observed that all the Alaska coals were low-grade, except those of the Matanuska and Bering fields, and that

he believed the coals of these particular deposits should be reserved for the use of the United States navy. In discussing the matter of leases, Mr. Griffith stated he was of the opinion that perpetual leases for all the coal in the ground was the most desirable form, since it induced the operator to put in substantial and enduring equipment and not endeavor to exhaust the mine in a few years, as would be likely in the case of a limited period of lease. The rate of the perpetual leases should depend upon the market price of the coal at the mine.

He was also of the opinion that the royalty should depend upon the price received for the coal, and that some kind of sliding scale with a reasonable minimum should be established. He was of the opinion that only strong companies with abundant capital should embark in coal mining in Alaska. As a rule, small operators will not mine the coal skillfully nor economically, and the waste under such a system is abnormal.

Further discussion of the matter led to the following motion by Eli T. Conner:

RESOLVED, That a committee of three be appointed to draft resolutions embodying a series of principles and suggestions to represent the views of the Philadelphia section regarding the present conditions obtaining in relation to the coal resources of Alaska, and that copies of this resolution be sent to each member of the section for his opinion and approval.

The motion being duly seconded, was unanimously adopted. The Chair appointed the following committee: Messrs. Conner, Griffith, and the Secretary of the Section, *ex officio*. It was the sense of the meeting that the Chairman, Mr. Sanders, should also serve on this Committee. To this he acceded.

There being no further business, the meeting adjourned at 11 p. m., to meet again at the call of the Chair.

F. LYNWOOD GARRISON,  
*Secretary of Section.*

### Meeting of October 17, 1911.

A meeting of the Philadelphia section was held at the Engineers' Club, Philadelphia, October 17, 1911, at 8.15 p. m. Members present: Chance, Garrison, Conner and Queneau. In the absence of Mr. Sanders, the Chairman, Dr. Chance was requested to serve in that capacity for the meeting.

The minutes of the previous meeting were read in part only, owing to their length, and after some discussion, were approved.

The committee appointed at the previous meeting to prepare



a series of resolutions embodying principles and suggestions to represent the views of the Philadelphia section regarding the coal resources of Alaska, reported that it had held two meetings, and had sent to each member of the section, for consideration and criticism, a rough draft of a series of propositions bearing on the subject. This document having been brought before the meeting, an extended discussion upon its subject matter followed, which resulted in the acceptance of several suggestions and changes. The draft, thus amended, was, on motion of Mr. Queneau, duly seconded, unanimously approved as an expression of the views of the Philadelphia section. As revised, it reads as follows:

Your committee finds the following conditions existing in the Territory of Alaska, relative to its coal resources:

First. It is essential for the proper development of Alaska that its coal fields be opened for commercial use without further delay.

Second. There are now known to exist in Alaska but two relatively small fields containing high-grade navy fuel, and inasmuch as the government now possesses no original source of such supply on the Pacific coast, it is desirable in the interests of national defense that a selected area of these fields be held and operated under the direct control of the government.

Third. It is in the interest of conservation, economic operation, and due regard to the public welfare as well as to the operator, that coal lands in Alaska be leased, and that these leases be made for all the coal in the ground.

Fourth. The royalties should be low and based on percentage of selling price of the coal at the mines.

Fifth. The minimum annual royalty should be nominal for the first two or three years after the execution of the lease, in order to permit and encourage the installation of efficient and durable equipment. After that period the minimum per acre should increase more rapidly than the area increases. For example: The minimum royalty for 5,000 acres should be several times more per acre than for 1,000 acres. Such a plan would tend to prevent the tying up large areas of undeveloped coal territory.

Sixth. A due-diligence and forfeiture clause, to effect continuous work, should be included in the lease.

Seventh. Leasehold in coal land should include all necessary mining rights, and agricultural rights to the surface.

Eighth. Leases should not be given for less than 160 acres and in shape should be square, their boundaries being east and west and north and south. In surveyed territory, the boundary lines must conform to governmental sub-divisions, and the unit of 160 acres must consist of four contiguous forty-acre plots.

Ninth. It should be clearly recognized as a basic principle that the value to the nation of coal lands in Alaska lies more in their use for industrial, commercial and naval purposes than in the royalties to be derived therefrom.

Tenth. It is desirable that the revenue obtained from coal royalties revert to the benefit of the territory.

Eleventh. The quality of Alaska coal varies from poor lignite to high-grade semi-bituminous and anthracite. The physical character of the seams also varies, the best coals being seriously and unfavorably affected by the geologic structure. The high-grade coals of Alaska, which are now available for development under the present state of the art of mining and utilizing coal, are limited in quantity, notwithstanding the exaggerated reports to the contrary which have appeared in the public press.

RESOLVED: That your committee is of the opinion that the present coal mining conditions in Alaska are unsatisfactory and detrimental to public welfare, and that laws should be enacted, based upon the above principles.

RESOLVED, That the committee recommends that this resolution be adopted as an expression of the views of the Philadelphia section of the Mining and Metallurgical Society of America.

Respectfully submitted,

ELI T. CONNER,  
WILLIAM GRIFFITH,  
R. H. SANDERS,  
F. LYNWOOD GARRISON,

*Committee.*

The Secretary then read a letter received from E. S. Hutchinson, of Newtown, Pa., denoting his approval of most of the propositions, but suggesting revision of certain paragraphs, as follows:

"Fifth. The minimum royalty should be small for the first two or three years after the execution of the lease, in order to encourage and permit the installation of efficient and durable equipment. After that period has elapsed, the royalty percentage

should be increased from year to year by the government official in charge of the special coalfield.

No lease to any one individual or corporation should be for more than 1500 acres.

"Seventh. Leasehold of coal land should include and cover all minerals and metals found on the tract, and, also, agricultural rights on the surface, but there should be a percentage royalty on all the minerals and metals sold, and also a royalty per thousand feet, board-measure, on all timber used on, or sold from the tract."

Mr. Conner reported that W. A. Lathrop, member of the section, requested him to say that he fully concurred in the conclusions and recommendations of the committee, as aforesaid. A letter was read from Baird Halberstadt, of Pottsville, expressing his approval of the same.

The secretary reported the receipt from Senator Penrose of House Bill 13,113 (Robinson) and Senate Bill 3,124 (Works), relating to the proposed mining laws for Alaska. These documents were ordered filed with the archives of the section. A letter was read from Dr. Holmes, Director of the Bureau of Mines, expressing his regret at not being able to attend the meeting. The secretary reported that Dr. Holmes had requested him to send a copy of the above resolutions to the Secretary of the Interior.

There being no further business, the meeting adjourned at 11 p. m.

F. LYNWOOD GARRISON,  
*Secretary of Section.*

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## SAN FRANCISCO.

The San Francisco section entertained visiting members and guests at dinner at the Fairmont Hotel on Oct. 16. Those present were Ralph Arnold, E. H. Benjamin, F. W. Bradley, D. W. Brunton, H. F. Bain, C. C. Brayton, Albert Burch, S. B. Christy, G. H. Clevenger, F. G. Cottrell, E. T. Dumble, Francis Drake, H. S. Drinker, Courtenay De Kalb, J. B. Farish, D. L. H. Forbes, C. W. Goodale, G. H. Garrey, E. A. Hersam, Ross B. Hoffmann, W. R. Ingalls, Chas. Janin, W. J. Loring, J. W. Malcolmson, Bernard MacDonald, J. M. Maclaren, C. W. Merrill, F. H. Morley, W. W. Mein, G. W. Metcalfe, S. W. Mudd, W. S. Noyes, E. W. Parker, W. C. Ralston, T. T. Read, D. M. Riordan, R. S. Rainsford, J. W. Richards, R. W. Raymond, M. L. Requa, F. L. Sizer, A. W. Smith, G. O. Smith, Joseph Struthers, W. L. Saunders, Whitman Symmes, W. A. Wilson, C. G. Yale.

S. B. Christy, Chairman of the Section, presided.



**The Chairman.**—At this meeting the members of the younger society have met to do honor to the older, the parent society. We have with us the Secretary Emeritus of the American Institute of Mining Engineers, a man whom we have all loved and honored; most of us know him as a man who has stood at the head of the profession ever since we can remember, who has made the profession of mining engineer in America an honored one, a man who has done more to bring mining engineers together into a self-conscious body than any one living. We all owe him a debt of gratitude that none of us will ever live to pay. He is going to start out in the morning with his dearly beloved wife on a voyage in search of health, and we all wish them God-speed. He has to leave us in a few moments to attend a dinner of his own Alma Mater, which is taking place within a block of this building, at the University Club. And in view of that fact I have thought it best to ask him to open the discussion this evening with a few words on any subject whatever that may come into his mind. We will have the pleasure of listening to our honored friend and guest, Dr. Rossiter W. Raymond.

**Dr. R. W. Raymond.**—Gentlemen, with so large a license as to subject as your presiding officer has given me, I certainly ought not to be at a loss to find something to say, and certainly that which ought to be said is the thing that is uppermost in my heart at this moment, a friendly greeting and a grateful acknowledgment of the kind way in which I have been—I will not say introduced—presented to you once more.

I have often encountered before this same bit of philosophical difficulty. The metaphysicians call it the difficulty of the subjective objective. It arises when we get up and talk about ourselves and praise ourselves to ourselves; and we do not improve it, if we divide ourselves into two societies and call ourselves two societies and then praise one another. Now, it so happens that ninety per cent. of what is called the younger society belong to the older society; and I think the other ten per cent. will very shortly, for I have been noticing proposals of membership passing around here this evening.

That difficulty as to subjective objective arising when one turns one's attention upon oneself, reminds me of the definition given by the German poet Haeckel in his satirical history of philosophy, in which he said, "The subjective objective is like a monkey boiling his own tail and at one and the same moment objectively participant of the process of boiling and subjectively conscious of it." That is the sort of double consciousness which, I say, is with us when we arise in meetings of this kind, (and they are not infrequent among mining engineers), in which we

glorify and contemplate and harmonize with ourselves, and shake hands with ourselves and bid ourselves bon voyage.

But, gentlemen, I shall segregate myself tomorrow from this difficulty of the subjective objective and, as I rise and fall on the waves of the placid Pacific, I may consider myself sufficiently separate from yourselves to look back upon you as another body of gentlemen and not a part of my subjective objective consciousness. From that standpoint, gentlemen, and in that aspect, allow me to greet you as fast receding friends, and allow me to thank you for inviting me to this hospitable coast—or, let me welcome you to this Coast, for I was here before you came here. My folks came in 1849.

John B. Farish.—My folks came in 1849, too.

Dr. Raymond.—We were just ahead of you. At all events I have found myself often and often, all the way from Dawson and the Klondyke down to Santiago, the senior of those who were welcoming me to the Coast. I bid you God speed, my young successors. I hope you will have a good time on this Coast. I did always, and I shall myself hope to live yet many years to come and admire your progress and your modesty and your achievements in every department of science and of art, and of good fellowship.

I do want to say one thing before I sit down: I never was so astonished in my life as I have been the last three days in this city in trying to sum up in my own mind the amount of work that has been done here in the last five years. I cannot take it in. The streets are no longer familiar to me; those streets that I used to travel with ease and frequency, and the views, have multiplied, and the splendid buildings on every hand; and the total amount of work since that mythical day on which you say you had a fire and earthquake is something that really passes far beyond my mental ability to compass or calculate. We all went—we Institute fellows—last Fall to see the Isthmus and the Canal, and we were impressed with the work being done there; but really I think the reconstruction of San Francisco is something more important as a matter of engineering than the building of that Canal. I do not say it has presented greater engineering difficulties; I do not say it is quite as worthy a subject for long papers; but it is quite as well worth seeing and it is quite as well worth praising. And if the Canal is the biggest achievement in one respect and on one side, the other great achievement of the same period has been this rebirth, regeneration, recreation of a metropolis; and for my part I think the two go well together, and I am glad that San Francisco celebrates the Canal.



If I were going to talk longer I would say something about the obstacles overcome. She has done it in spite of a great deal of bad politics, in spite of a good deal of tyranny in labor, in spite of a good deal of doubt and hesitation among other people—and in spite of everything except Providence and her own strong heart; and she has given in that reconstruction another proof of the old, deep, eternal truth that God and man together are omnipotent.

**The Chairman.**—The subject that has been assigned for the evening is "What shall the Government do with the mines of Alaska?" The opening paper has been assigned to Mr. Bain and he will present his views on that question. We all know that this is a burning question. Just at present conservation is in the air, and some go so far as to say that we may not look after anyone but our descendants. Of course, there are many possible courses of action. One is, to let things develop as they have in the past; another is for the Government to lease the land to private enterprise, controlling the work; and a third is that the Government shall work the mines for itself. These are only a few of the possibilities. We all know that Mr. Bain has some decided views on the question. He has been recently over the ground and we have a number of others present who will probably like to speak upon the question. We will now hear from Mr. Bain, who will open the discussion.

**H. Foster Bain.**—When the Committee asked me the other day if I would open this discussion tonight I said that I thought I had already opened the discussion the other day at the St. Francis. Tonight I have—I will not say the advantage of speaking after Dr. Raymond—but I have the advantage this time that he will not speak after me.

By way of opening this discussion, I will read to you a rough draft of a report prepared by a committee from the Philadelphia section of this Society, which I have just received to-day. All of you know that the Philadelphia section is peculiarly qualified to discuss a fuel problem, because of the large number of coal mining engineers who are in that section, and Mr. Garrison has kindly sent me the rough draft of their report. This has not yet been presented by their section, but my impression is that it has been prepared after a formal discussion and probably represents their view of the matter.

(Here Mr. Bain read the report of the Philadelphia section, as printed on a preceding page of this Bulletin.)

In addition to reading this report I have but a few words to present. I shall not say much about the geology or extent



of the Alaska coal fields, since Dr. Smith and others here present are much more competent to do so.

The Bering river and Tustumema fields seem to be practically the only ones which have valuable high-grade coal. While Alaska has enormous resources of coal, there is only a limited amount that has any present value. In the two fields the conditions differ greatly. In Tustumema the mining conditions are much more adverse, and the transportation difficulties are much harder to overcome because a longer railroad haul is required. In the Bering field, which can be opened by a shorter railroad, the conditions are very bad in general, since the coal has been badly crushed and broken. The result is that in working there, aside from the difficulty of mining, only a small percentage of merchantable coal will be obtained. You will have a great deal of fine coal to dispose of, and only a limited market.

The most serious matter confronting the Alaska coal mine owners and holders is that of markets beyond the local needs. A great deal has been said of the future possibilities of Alaska coal, but practically and for present purposes it seems to me that the market is extremely limited, for the reason that all the large power users, even the railroad which extends to the coal field, can save money by using California oil. In building the Copper River & Northwestern Railroad they used about 50,000 tons of coal and it cost \$9.50 a ton delivered. When it has to be transported across country in small bags it costs about twice as much as high-grade anthracite sells for in eastern cities. You can imagine the encouragement a man has to open a copper property with a fuel supply such as that.

There is, however, a certain market for Alaska coal. There is a local demand for the reason that a great deal of work must be done before a consumer can afford to put in the tankage and other equipment necessary to burn oil, and for other reasons it is desirable to have coal. This local market has been estimated by Mr. Brooks at approximately 1,000,000 tons. In addition, and much more important, there is the possible use by the navy. So long as the naval officials feel that it is necessary to have a coal supply, and not to go over altogether to oil, they will require a high-grade coal; and the only high-grade coal now available is that brought from the East. In bringing it from the East you burn up a great deal in getting here and pay a large transportation cost; and even after the Canal is finished there will always be the danger of temporary suspension of coal supply. Besides that, the Pacific Coast coal can compete with that from the Atlantic states for certain purposes; in spite of the fact that oil is used so extensively there is some market for coal, for

use in grates and for small plants. It is also used for the bunker trade for the Pacific Coast steamers. I do not think, outside of the local market in Alaska and the needs of the navy, that the demand is important at present or is likely to grow very much. At the same time, those two things are sufficiently important to warrant an effort to open this coal.

The other day in discussing this matter I stated that the present law was entirely inadequate and unsatisfactory. One of the gentlemen asked why we could not do in Alaska as we always had done before—let the men on the ground develop the coal, as they have done throughout the West. Now, there are several reasons which appear to me as excellent why that will not work in Alaska. When you protest in favor of letting the local resident open the coal in Alaska you are not really making a protest for the man on the ground. You are making a protest in the interest of the non-resident owner, because the man who lives on the flats around Controller bay has not got the money to open a coal mine, or he would not be living there. It does not seem to me that any good purpose is served by allowing anybody to go out and take up land which he cannot use and must sell to another man who can use it. That is, to give to one person the right to hold up another. Why not be sensible, and let this land go to people who can use it, in large enough units to use it to advantage.

The second reason why we cannot go ahead on the old system is this: As a matter of politics, popular sentiment will not allow a reversion to the old system. The party dominance is in the Middle West and the East, and in those states, whether they are correctly informed or not, people have made up their mind that some change must be made. What Westerners can do is simply to direct that sentiment to the maximum extent, to use their influence to get the most beneficial change rather than the one that will do the most harm. In a general way, the two things which the Eastern people have in mind, and desire to change, are the two things which go very deep as regards the Alaska coal situation. They are concerned with the unearned increment; they think that whether it was wise in the past or not, in future it is not wise that the unearned increment shall go to a few individuals rather than the general public. In the second place, a large amount of the opposition to existing conditions has not arisen from monopolies, but from the abuse of monopolies, and the desire is to prevent extortion by possible monopolies in the future. I think those two things must be taken into account in framing any law to govern this situation, as I am satisfied they must be taken into account in framing many remedial laws in the future.

In the third place; the reason we cannot go ahead in the old way is the Cunningham decision; and if I have read that aright (and I have read it with a number of lawyers who are intimately concerned in the matter), it is practically impossible for anybody now to take up coal lands in sufficient quantity to open a mine. It is entirely true that the courts have upheld the right of a man to sell after he has a receiver's certificate for the land. Incidentally I might say that all this public furor over what is called the Cunningham tract, was merely an adroit political move; it had absolutely no basis, as was admitted by a number of the government witnesses on the stand. It was simply used as something which would arouse public opinion in order to stop something else.

However, if you have read the coal land affidavits you know that when a man takes up public coal land he swears that he takes it up for his own personal use. I maintain that that is not the same thing as having some company pay his expenses while he takes it up, and look after all the expenses of filing the claim, with the understanding that he will turn that land over to it as soon as he gets the title. Furthermore, it seems to be radically wrong for a person to be allowed to take up coal land for his own personal use when you know and I know, and he himself knows that he has neither the money nor the ability to get the money to open a mine. That is what has been done commonly throughout the West. As I said the other day, I do not condemn it, because it was the only practical way in which the land could be opened up, and it was because of that that the coal industry grew in spite of the law. The man that maintains it is a good law does not see very far into the matter. It seems to me that courts would rather make bad citizens than repeal bad laws.

Now, the Cunningham case was decided on three points. (Incidentally I might say that I have not read the brief prepared by the Government, but have read the brief prepared by the Cunningham claimants, and the decision.) The points were these: That the law of 1904 was not an independent law, but was an amendment of the old law and therefore must be construed in the light of the old law. That, of course, is a purely legal point. The second point was that as a matter of fact the Cunningham claimants had operated as an association. The Cunningham claimants, I might say incidentally, have my entire sympathy, and, so far as I know them personally, are honorable men who were trying not only to get coal land under the law as they knew it, but made their very best efforts to find out what the law was. They were simply working under a bad system, and considered themselves merely as a group of gentle-



men who were coöperating in the common development of a number of claims. Now, you can see that the difference between that and an association is indefinite. It is a case in which it is very difficult to draw the line, as a matter of fact; and the decision of the Commissioner, endorsed by the Secretary, was to the effect that whatever may have been their intentions, that as a matter of fact they did constitute an association through the whole thing. In the third place, and this seems to me the vital thing, that is the consideration that concerns the rest of us for the future—the Commissioner decided that no mine had been opened, and the law plainly states that a mine must be opened. Now, it is quite possible to get good definitions for the word mine which would cover the work which had been done on the Cunningham claims, and which would commonly cover what has been done on the western coal claims. Yet you and I would not go up there and open coal mines when we had no railroad, no market, no title from the Government, and when we were not certain we were going to get a title. So it seems to me that this strict construction as to what constitutes a mine, if it stands, will make it practically impossible for anybody to get any more coal land from the Government, and therefore we must have a change if development is to go on. The general sentiment concerning the conservation movement is to “try it on the dog,” and therefore to try it on Alaska. I have brought up this Cunningham decision because I was perfectly certain that it would come up during the evening, and I wish to repeat that my personal sympathies are with the Cunningham claimants. A very great injustice was done to them, arising from a combination of circumstances, and I think some compensation should be made to them.

With all of these difficulties in the way, it seems to me quite clear that we must have some new system. I have my personal opinion as to what that ought to be. No doubt there are a great many other opinions on the subject. I have read you the report of the Philadelphia section, which is unusually competent to take up a matter of this kind. In a general way my opinion coincides with theirs. I am in favor of the leasing system, primarily for this reason: It is flexible; if we make a mistake, and find that we want to change later, we have not tied everything up for the future. If it is desirable to give full title that can always be done; on the other hand, after giving a fee, it can not be taken away. Thus it is possible to give more, while it is not possible to give less. In the second place, in any change of the law it should be recognized that large areas of land should be given to men who are able to handle them. It is nonsense to give 160 acres of coal land to every man that

asks for it. You justify that on the ground of citizenship. If it is only a bounty to citizens, why is it not more sensible to give an old-age pension? No man can undertake to develop 160 acres; there are rare exceptions, but as a general thing it cannot be done. The claims should be larger and it should be taken into account that when a railroad has to be built a very large area is necessary.

In addition to the suggestions made here, I have one from George S. Rice, who is the chief coal mining engineer of the United States Bureau of Mines. His suggestion is that in order to conserve the coal and secure better mining, the royalty should to some extent depend on the percentage of recovery. If a man leases the ground and recovers only 50 per cent. of the coal he should be charged a certain rate; but if he gets out a larger percentage he should pay a lower royalty; and if he should recover 90 per cent., some further benefit should accrue. It seems to me that this question is one that will not be settled immediately; it is going to take some time to do it. My own feeling is that it would be a wise move for the Government to attempt the temporary supplying of the navy and the local demand by opening a mine at its own expense. The Bureau of Mines has on its staff some of the most competent coal mining engineers in America. They are just as practical men as you could hire for your own business, and why not put some of those men in charge there if the Government is going to go into coal mining?

**The Chairman.**—We all have to thank Mr. Bain very heartily for his paper, and I would like to add a word along the same line. One of my former students, a perfectly honest, square man, went up to Alaska and spent several years trying to locate some coal claims which he thought were valuable. He told me that he did everything that he could possibly think of to comply with the laws as they were at that time; he filed his applications just before the land was withdrawn from entry, but his titles have been held up, and he was practically ruined together with the others that had gone into the work. They had put in everything they could scrape together to open the land and were about to reap the reward when the land was withdrawn. A great deal of hardship resulted, and he felt that great injustice had been done. Of course, as regards the Cunningham lands, I have nothing to say, because I know none of the details. We have a number of gentlemen here who are competent to speak, and, among others, we have George Otis Smith, Director of the United States Geological Survey, from whom we ought to be very glad to hear on the same subject.



**George Otis Smith.**—As I come here again to enjoy a meeting of this Section and to participate at one of the banquets, I realize that we have a center of influence here on the Pacific Coast, in this section of the Society, that is sorely needed. I believe the time has come when mining men, in order to protect themselves and, what is more important, to insure the proper development of this country—and I am using country in its broadest sense—must get together and boost in truly Western style. I am glad to be here to endorse practically everything that has been said by Dr. Bain.

One of the exceptions that I would make would be his mention of me as representing the Survey that has much to say on this subject. It is Mr. Brooks who is the one qualified to speak on Alaska. When a Congressional committee wants something on Alaska I ask Mr. Brooks to appear before the committee. I think possibly that we have now come to the point where we are going to have a change of method in the discussion of Alaskan problems. We are now going to have more talk by men who have been there, and less of it by those who have not been there. It will mean a great deal if we are to have something written and spoken by Dr. Bain, rather than headlines written by men who have never been west of the Mississippi river; or magazine articles, written by men who would be lost if they got as far west as the Mississippi river. We have had Alaskan problems put before the American people with the poorest grade of printer's ink, and the poorest grade of printing paper; but the raw materials which have gone into the making of this expression of public opinion—I mean the ink and paper—are far superior to any intellectual element in the ordinary product that was put before the American people.

As Dr. Bain has said, we are facing a psychological condition. It is not what is the truth concerning Alaska, but what do the people think. I have been mystified sometimes when I have heard them talking about what we are going to do with the revenue that is to be secured from the exploitation of this or that national resource. I think it would be a mistake if any of us anywhere near the seat of Government should get the idea that to develop these resources we must think first of the revenue.

Really, in this question of government ownership and government operation of a mine, I am less concerned with what we are going to do with the revenue from that land, than whether we are going to settle the expenses of that land on the Territory of Alaska, or whether we will let our friends in the East bear their per capita portion of that tax. It will be much the same when we talk about railroads; I want to see some railroads built



up there, but I am not thinking about the dividends that are to be declared to the American people.

I am willing to go on record among my friends in saying, that while it is true that under force of circumstances, and sometimes without any force of circumstances, some illegal things have been done out here on the public domain, we must admit that just as crooked things have been done by representatives of the Federal Government as by the representatives of the people who really wish to develop the mineral resources of the country. I saw a letter only a few weeks ago relating to a supposititious coal operator who, realizing that he needed more than 160 or even 640 acres of coal land, contrived in some way to get hold of adjacent territory; possibly not, probably not, by defrauding the government in the matter of dollars and cents, because he was just as willing to pay the government price on one section of that land, as on another. But in order to get the sufficient acreage he did what he thought he had to do, i. e., got the land of the government, paying the same price for that land as if a half a dozen men were to operate and hold it rather than one. The government was not defrauded, although it was not a legal transaction; and yet I believe that we are forced to make the actions of that man conform with the statute as it is on the books, and I stand with any Federal officer, whether he belongs to the Department of Interior or the Department of Justice, who is on the trial of that man, and intends to bring him up and correct the mistake. In that same letter I noted that it was also declared that while the Federal Government is after that kind of thing, the same administrative officers should not turn about and try by hook or crook to make a withdrawal of certain lands in order to prevent a certain thing, or to accomplish something. The line was sharply drawn, or you might say, the comparison was sharply made between a dummy entry and a dummy withdrawal, and I would agree with the writer of that letter that the man who has, as a Federal official, had any part in making a dummy withdrawal is just as blameworthy as a man who has made a dummy entry.

I am gratified that this Society is taking this interest in public land legislation. The remarks which I made at Houghton last August have been republished and doubtless read by most of you gentlemen present. I will content myself now with saying that something should be done, and the point I had the pleasure of making before the zinc mine operators a few weeks ago was that the necessary thing is that this movement be started, that an interest be taken by some of the men who know what they are talking about, that we should not leave it to the editors of popular magazines to tell how the mineral wealth of this coun-

try should be treated: We are going to have some new laws, I hope; but we will not get them, and we will not get them right, except as you men get behind and under the matter and boost. The point is that it is just as essential in getting legislation back in Washington to have the right kind of information as it is to run a stamp mill or a dredge or a smelter. You have to know the facts and then map out your course in accordance with the known facts. And I hope, whether special committees come on to Washington, or individuals take it up, or whether you send in some non-political resolutions such as read here tonight, I hope that you and many other bodies like you will get together and try to help along this movement.

At the present time we are developing oil land with a law that was made, not exactly to help gold mining, but apparently to control and keep gold mining from going ahead too fast. It did not promote gold mining, and it is the worst kind of a law for oil development. Our general mineral-land law antedates the present knowledge of either geology or the technology of the industry and is completely out of date. I believe in abiding by the law as long as we have it, but do let us have something else in its place.

**The Chairman.**—We are all grateful to Director Smith for his remarks. He touched on one thing I have always believed in, namely, that the engineers in the United States have not done their public duty in helping to form public opinion on these large questions, and it is particularly true of the mining engineers. They are so busy, they are so scattered on the face of the globe, it is so difficult to get them together, that their influence has not been what it ought to be, and what it seems to me it can be if we can once find a method of getting together the expression of the men who are doing the engineering of the country. It is a hard problem, and these little gatherings have made us realize that it is worth while doing; but our country is so very large and they are so scattered that it is difficult to do it.

We have with us one of our Eastern members who has had a great deal of experience in coal mines and in coal legislation, and I am sure that we will all be glad to hear from Dr. Parker, of the United States Geological Survey.

**E. W. Parker.**—Mr. Chairman, I did not expect to be called upon this evening, and I am rather at a loss as to how to begin. I am glad, however, that the Director has spoken first, so that I need not commit myself in a way different from him.

The Director and Mr. Bain, have both spoken in regard to the necessity for getting away from the idea of the small operator. If the coal resources of Alaska are to be developed they



must be developed on a large scale, and very great difficulties at the present time are apparent, and the principal one is the necessity for building up a market for those fuels.

There is not today on the Pacific Coast, even for the necessities of the navy, and for the necessities of Alaska, enough market for the opening of one good coal mine in Alaska. Mr. Bain has spoken of the navy. I have forgotten exactly what the figures are, but I should say that the amount of Pocahontas coal that has been brought around from the East, allowing possibly one ton of coal for bringing each other ton of coal to this country, amounts to not more than 20,000 tons. That is not 10 per cent. of what one coal mine in Alaska ought to produce if it is to be produced in an economical way, and in the way of properly conserving that supply. The small unit is the wasteful one; the large unit is the economical one. I have no knowledge personally of the coal fields of Alaska. Mr. Brooks, as the Director has said, is the man we look to for all information along those lines; but I might call attention to what has been done in the East, particularly in the anthracite region of Pennsylvania.

That is today the one region that is—I do not know whether you call it suffering—possibly benefiting, from the fact that it is a natural monopoly, and that is operated in a monopolistic manner. It is only a few years ago comparatively when the anthracite coal of the United States was mined by people who were cutting each other's throats and sacrificing that almost invaluable product. At the time that the anthracite coal workers' commission made its report, not so many years ago, it was estimated that for every ton of coal that was marketed and shipped two tons of coal were wasted. That one ton of coal meant really three tons of coal that had been in the ground, and a great deal of that will never be recovered. Since the operators of that region have been able to get together, before the government stepped in and said they were doing wrong, the recovery had increased from one ton for every two tons lost, to two tons recovered for every one ton lost. And that one ton is not to be considered as non-recoverable; when the supply has become less and the price will admit of a little more expenditure, a little more care in the mining methods, that also will be recovered.

The coal resources have got to be administered in large units; and yet the Government is today stepping in and telling the anthracite operators in Pennsylvania that they must not combine, and must not control the market as they are doing today. The Delaware, Lackawanna & Western Railroad, and the like, having the authority to mine, transport and sell coal, is a very liberal proposition, and that proposition has been



really the savior of the anthracite in Pennsylvania. And when we come to developing the coal resources of Alaska we have got to look it in the face and say that the inducements offered shall be just as liberal as those with which the anthracite region was first developed in Pennsylvania.

**The Chairman.**—We have the pleasure of having with us the Secretary of the Society, the editor of the *Engineering and Mining Journal*; you will be glad to hear from Mr. W. R. Ingalls.

**W. R. Ingalls.**—I did not come here this evening with any preparation to speak about the Alaska coal question. I can only express some views on the basis of the remarks that have been made by the speakers that have preceded me.

Unquestionably an enormous lot of nonsense has been published by the magazines of the East, which has created an incorrect idea about the situation in Alaska. In some cases, I have no doubt that the editors of those magazines themselves knew the inaccuracy of some of the things that they have published. I recollect at least one occasion when the editor of one of those magazines, or his representative, came to me with a proof of an article that he was going to publish, saying that the author was not at hand, that he doubted some of the figures, and would I be so good as to correct them for him. In glancing over the proof I obtained the impression that the article as a whole was quite inaccurate, and gave this gentleman some references on the subject that would help him to correct the matter. After looking them over he said to me that he was satisfied as to the inaccuracy of the article, but that his next issue was substantially on the press and he would have to publish it anyway. I recollect one article that appeared in *McClure's* under the title of "Billions of Treasure"—existing in the coal fields of Alaska which I am sure all of us here would question very much, but that has conveyed to the public the idea that there is some enormous treasure in Alaska which the Guggenheims or somebody else are desiring to gobble.

However, it seems to me that Dr. Smith indicated a very important thing when he implied that the coal land question is a broader one than pertains to the coal lands of Alaska alone. Does it not equally pertain to the coal lands of the rest of the country? Is it possible for any operator, with the most sincere intentions of developing the resources of the West, to obtain the necessary amount of land in a perfectly legal way? Is it not true that all of our great industrial companies, such as the Amalgamated Copper Company, the American Smelting and Refining Company, Phelps, Dodge & Company, and others, which have needed coal for their own industrial purposes, have

been in trouble with the Government, if not under actual indictment under charges of breaking the laws?

With such a condition is it not obvious that we must make some change in the law so that it will be possible for concerns of that character to obtain the amount of land that is necessary? We know that while in former times 160 acres of coal land may have been sufficient for the development of a mine, under modern conditions, involving perhaps the construction of large coking plants, such an area is absolutely inadequate.

It seems to me that we need a law that will not only throw open the coal lands of Alaska, but will also throw open the coal lands of the country in general to location in a perfectly legal way in areas sufficient to permit development under modern conditions. Whether that be done under a leasing system or some other system is a matter open to discussion. The bestowal of public lands under a leasing system would not be without precedent in this country. In the early days of the Louisiana purchase, when the Government acquired large areas of lead land in Missouri and Wisconsin, the government retained possession of those lands, and permitted their exploitation for a great many years, under a royalty based upon the produce. In that case, the system did not work out with satisfaction. The pioneers who operated mines then on the frontier, with rifle in hand, were not disposed to pay any royalty to the government, especially if it happened to be on a losing venture. That, however, is no reason why a leasing system might not be successful under modern conditions; and I believe, in fact, that some of the Western States, Colorado anyway, successfully have given their school lands containing coal to companies operating under lease. There seems to be no good reason why our Federal Government should not be able to operate in the same way. The important thing, however, it seems to me, is that the Alaska coal lands be speedily thrown open to development in some way.

**The Chairman.**—Several years ago at the St. Louis Exposition I met a gentleman who was on the Jury of Awards, who took the most intelligent and painstaking interest in the awarding of the prizes at the mining exposition there, and I have ever since had the greatest regard for him. He is an expert from our sister country on the other side of the water. He is going to escort our guests over to the other country and give them the glad hand of fellowship. I have great pleasure in introducing Dr. Kanda.

**Dr. Kanda.**—First of all, I will convey my thanks to the American Institute of Mining Engineers that it is not alone for Americans, but also for foreigners, including the Japanese. I



must thank also the San Francisco members who received me with so much hospitality.

I will now draw your attention for a moment to the mineral resources of Japan. The production of minerals in Japan has greatly increased in recent years, the value of the produce now amounting to a little more than a hundred million yen annually, of which coal represents about sixty-seven million yen. The production of copper in Japan is about forty thousand tons a year. New copper mines are being opened but some are getting old and their ore resources are diminishing. The gold production of Japan amounts to about five million yen per annum, and so far as we can foresee no material increase is likely to occur.

**M. L. Requa.**—One of our members, Arthur D. Foote, has recently come under a serious surgical operation at Adler Sanatorium, from which he is now convalescing. I would like to move that the Chairman, as a committee of one, wait upon Mr. Foote and express our sympathy and congratulations to him that he has safely passed through the crisis.

The motion being seconded, was carried unanimously.

**The Chairman.**—We have with us the Asst.-Treasurer of the United States, the Hon. W. C. Ralston. I would like to call upon him.

**W. C. Ralston.**—The suggestion occurred to me a moment ago, in hearing Dr. Smith say that he hoped that discussions of similar questions would take place so that information could be imparted to Congress, that if you at some future meeting invite to be present the congressmen from California, and discuss this question with them, you would strike a responsive chord, and the meeting would be very beneficial to you. Those who have had experience in going to Washington on affairs affecting the West, especially the extreme West, have found it very difficult, as individuals or even as a committee, to obtain much attention; I suggest therefore that the educational work would be better done if you started it at home.

**The Chairman.**—There is one gentleman I would like to call on. I have not asked him to allow me to, but I am going to ask for a word of wisdom from our very dear friend, Mr. Saunders.

**W. L. Saunders.**—I have listened with a great deal of interest to what has been said here tonight. I thought to myself that suppose I were a congressman and had been invited as a congressman to listen to your discussion, I would go away without knowing anything more about it than I knew before I came. I mean by that, that no suggestion seems to have been



offered as to how to do the thing. It is all right to say that we ought to do something, but how?

I am very very much inclined to the opinion, though it differs somewhat from the remarks I have heard here tonight, that we had better let individual effort, aided by capital, develop Alaska. It seems to me that the great West, right here at your feet, the gold fields of California and Nevada, have been developed by individual effort and not by government control. It seems to me to be the fact that the Government should understand and let the capitalist know that if he invests his money and his time in these fields and these new enterprises, he is entitled to a speculative profit. It is a speculative enterprise, it seems to me, that develops any new field in any country.

I have had some experience with government control in Russia. There are a number of mining properties in Russia that have been practically untouched; some of them have been developed to some extent by the Government; but the Government's taking hold of this matter and discouraging individual effort and capital has, I think, retarded the development of the mineral industries of Russia.

Now, I do not know why there should be any difference in this country, nor why Alaska should be any different from California or Nevada, or from the anthracite fields of Pennsylvania or from any other district where it is necessary to invite capital, where it is desirable to get individuals to give their time and money to the development of these industries.

**The Chairman.**—Gentlemen, I think that Mr. Saunders has put his finger on the objection to having congressmen attend these meetings until we have formed our final opinion and until, as he has very correctly said, we have agreed on this question. We have simply started a discussion, and the differences of opinion are here. Discussions are the only means by which questions like this can be threshed out, and I hope that the Section will not confine the discussion of this subject to this meeting. I think it is a question large enough to discuss at a good many meetings, and moreover in order to open questions of this kind it is often well to refer them to a committee to prepare a well-considered report on the subject.

Now, gentlemen, we have asked a few gentlemen to speak without giving them any more notice, practically, than our friend who spoke last; and now in conformity with another practice, we throw the question open to the meeting. Mr. Yale possibly would like to say something.

**C. G. Yale.**—I happen to be, gentlemen, an Alaskan pioneer.

I went up there fourteen or fifteen years ago, mushed around, walked on snow-shoes, and did everything.

The question that most of the Alaska men, when they come to the office of the Survey, bring up constantly has not been touched upon. That is the question of individual development which Mr. Saunders has spoken of. They want to know why they cannot get the coal out. I went up 1,500 miles on the Yukon in a wood-burning steamer, and had to get out like all the rest of the passengers every fifteen miles and cut wood. The coal along the different places was not being mined. There is coal to this side of Point Barrow, where the cutters used to take the coal out themselves. They cannot touch it any longer. They are using fuel oil now on those river steamers; but the question with all those men is, why can't they locate a mine themselves and use it for their own domestic purposes. That is the question that all those Alaska men ask. They say the Eastern men do it, why can't they do it?

**H. F. Bain.**—I think that under the laws, outside of the lands that have been withdrawn, if a man has a claim he probably could open that kind of a mine; but I did not personally see any coal seams near the towns, and those who wanted to open a mine did not want to open that kind of a mine; they wanted to open a mine that would enable them to sell town lots a hundred miles from the mine.

**The Chairman.**—The question is before you, gentlemen, and what is your pleasure? I remember Dr. Raymond told me one line he was going to open out on, and that was that the Government had put it off too long, and that there was not any present need of coal in California, that there was an over-production of oil, and there really was not any present need for coal, and the best thing to do was to conserve that coal in Alaska for the next generation.

**M. L. Requa.**—Mr. Chairman, I thought I said all I had to say at the meeting of the Institute the other day; but I cannot refrain from repeating what I have said a number of times before, and which I expect to repeat again a great many times, that the coal of Alaska cannot compete with the fuel oil of California until the latter has been practically exhausted. Mr. Bain spoke of the domestic consumption of coal in California. It so happens that I am burning fuel oil in my own residence, and there is no reason why it cannot be burned in a large number of other residences, and more especially because of improvements recently devised permitting the burning of California crude oil for domestic purposes. I am not speaking of gasolene and distilled oils,

but of the crude oil which can be burned with equal facility, with an investment of one or two hundred dollars. Now, so far as the relative economy is concerned, it will save easily 50 per cent. or more upon the present selling price of coal in the California market; and there is no place upon the Pacific Coast from Alaska to Chile where the Alaska coal can possibly compete until oil is selling at a price in excess of 75c. per barrel at the well. At the present time the price is 30c.; at that price there is not any money in it for any one. The cost of producing oil in California is more than that to the average producer, but at the present time it is selling for 30c. at the well. Therefore, if coal cannot compete when oil is selling for 75c., what is the use of discussing now how the coal fields of Alaska shall be developed. If you had Alaska coal developed today, if you had transportation there, it is my sincere belief that you could not find a market sufficiently large to return any profit whatsoever upon the investment; and that this condition will continue, in my opinion, for a great many years to come. The area of oil land in California has not been yet defined. We know of a great many places that will eventually be tested with the drill and a great many of those places will unquestionably produce oil; so that under existing conditions it is fair to say that the limits of the oil fields have in no sense been defined. No less authority than Arthur L. Bell, the field manager of the Associated Oil Company, has gone far beyond the estimates of the United States Government, which estimated a maximum of 8,500,000,000 barrels of oil. In a paper read before the Society of Mechanical Engineers here in San Francisco some months ago, he estimated the present probable area as sufficiently large to afford a production of 17,000,000,000 barrels. Mr. Bell did not take into consideration these areas of which I speak, and which are well known, that contain additional possibilities, but he confined himself largely to the proved area of the State. If the congressmen and other gentlemen would realize the situation from the view point of the California oil producer I think that they would come to the conclusion that it was not very much of a question at the present moment as to what should be done with the coal fields of Alaska, but rather a question that they could put away off into the future.

There is a question, however, that should be taken up in the near future, and decided, and that is the question as to what shall be done with the withdrawn oil lands owned at the present time by the United States Government; I believe that before the coal fields of Alaska are exploited, that the withdrawn oil lands of California must come into the market and be operated in some manner. The withdrawal of that land was a very for-



fortunate thing for the oil producer, because it kept a lot of people from going broke, since they would have gone in there and drilled that land and produced oil without any market, and the acute situation would have been rendered more so. Further than that, it was a step in the direction of sane conservation, because it kept the oil in the ground, where it did not do any harm, and where it would do the future generation a great deal of good. The remarks as to allowing the individuals to exploit these resources, I concur in to a great extent; but it is a fact that if the great companies were given a free hand to do as they please, the small producer would absolutely be swamped. It costs a great deal to build a pipe line, about \$10,000 a mile; and unless there were some law whereby they would be compelled to take that oil at a reasonable price and transport and sell it, the small man would be absolutely bottled up. He could not put it on cars, because rail transportation cannot compete with pipe-line transportation. On the other hand, if the Government recognized the pooling agreement or any other agreement you please to call it, whereby a reasonable price would be established, the small producer would be immeasurably benefited. If today three men in San Francisco, the managing directors of the Standard Oil Company, the Associated Oil Company, and the Union Oil Company, were permitted to agree upon the price at which oil should be sold, they could do one of two things: They either could effectively bottle the small producer, or they could create a situation where the small producer could make a very handsome return. And I doubt at this time whether it would be wise to place that power unrestrictedly in their hands. I do believe, however, that if that power was permitted—if they were permitted to create a certain kind of an agreement—and it would have to be under some sort of government supervision—they would not only immeasurably benefit the industry as a whole by establishing a fixed price and also by conserving the oil and keeping it in the ground where it properly belongs when there is no demand for it, but they would also give to the State of California an adequate return for one of its greatest assets, which is being dissipated today, and when once exhausted can never be replaced. If it is exhausted without an adequate return to the state, the state is just that much poorer, because it benefits no one in the State of California, but on the contrary, it benefits the people of Chile, of Peru, of the Hawaiian Islands, of Alaska, and the states north of us, who get cheap fuel at the expense of the State of California.

**The Chairman.**—I cannot help remembering a story that Mr. Arnold Hague told me of an experience he had in China. Li Hung Chang—if I remember rightly—was very anxious to

develop the resources of China, and he sent for Mr. Hague to report on the possibility of developing the coal, iron, gold and silver mines of China, and offered him every facility for making his examinations. When he made his report it was submitted to a large gathering of Chinese officials, who had a great many questions to ask, such as: "Are you now able to recover all the gold from the ground, and get it all out?" Mr. Hague replied, "No, we don't recover it all." "What becomes of that which is left?" "That is lost." "Are you able to extract all the coal from the ground?" "No," he said, "we do not get it all out." So, they asked a great many searching questions of that sort, and Mr. Hague had to admit that mining methods were not quite perfect yet. They said they would like to discuss it among themselves; they retired to another room and after a short time they came back and said: "Mr. Hague, we are very much obliged to you for your advice; we are ready to pay your fee; but we have decided we will wait about 500 years, when the methods of mining are more perfected than now, and then we will undertake the mining of our resources." That seems to be the attitude of mind that some of our members have about the coal fields of Alaska.

Now, the question is open for discussion. Are there any further remarks? I am sure there are a great many here that I would like to hear from. Mr. Bradley, you have been mining in Alaska; have not you something to say?

**F. W. Bradley.**—I am not competent to talk upon the subject in a broad way, because I am selfishly interested in a small portion of Alaska; besides, I have had no experience in mining coal nor am I familiar with the Alaska coal fields.

I am not very enthusiastic about the discussion anyway, because it seems to me it is having a tendency to urge the trial of experimental government ownership of coal mines and railroads on the Alaskan dog, and what I am afraid of is that the dog will have to pay the bill. Neither am I in sympathy with the proposition that the coal fields should be thrown open immediately, so that the poor people of Alaska may mine their own coal to keep themselves warm through the winter time. As a matter of fact, in the portion of Alaska I am familiar with, the householder obtains all the coal he requires delivered at his house for a less cost per ton than the householder pays here in San Francisco.

**C. W. Goodale.**—I was in hopes that Mr. Requa would tell the meeting that he and I have been listening with special interest to all the suggestions made, because we are on a committee appointed by the president of this Society, of which Mr. Winchell is chairman, and it will be the duty of that committee

to frame some suggestions regarding improvements in our mining laws to present to the Society. I suppose, the idea is to place the matter properly before the parties who will have an opportunity to amend those laws.

The other countries to the south of us, Mexico, and to the north of us, Canada or British Columbia, have adopted the square location and certain boundaries controlling the mineral rights; and while that condition could not be installed or could not be enforced in the mining districts which have already been in existence some time, yet in Alaska, and in new mining districts in other states and territories, the square location should be the rule, and a great deal of the trouble and cost to mining companies would be done away with. It has been my experience covering over 30 years in mining that this feature of the law has been most exasperating; in the case of one company with which I was connected, their litigation extended over twenty years and was largely based upon that extra-lateral right. It cost probably half a million dollars, and finally they lost their property, declining to fight it any further after 20 years of strenuous and expensive litigation. So, for my part, I shall be especially interested if something can be done to cut out that particular feature of our law.

**The Chairman.**—I think we agree in the unwisdom of extra-lateral rights. On the other hand, a law is a peculiar thing. When a law is passed certain equities ensue, and it is very difficult to make changes without tearing the whole social structure to pieces, and it looks as if the United States has waited too long.

The matter that Director Smith referred to, in regard to the application of the placer mining laws to the oil fields is one example of the unwisdom of these laws, and another is the application of the placer laws to the drift-mining claims, where a man cannot possibly make a discovery without expending one or two hundred thousand dollars in driving an adit.

We are very glad this matter has been put in the hands of a committee, and hope that it will be able to make a well-considered report, which unquestionably will have considerable influence.

On motion duly made and seconded the meeting here adjourned.

H. FOSTER BAIN,  
*Secretary of Section.*



## PERSONALS.

It is announced that Alfred H. Brooks has declined the offer of the position of chief geologist of the U. S. Geological Survey. Mr. Brooks has requested of Secretary Fisher the privilege of continuing his work as head of the Alaskan Division of the survey, rather than accepting the offer as chief geologist.

E. R. Buckley has opened an office as a consulting mining geologist and engineer at 1364 Peoples' Gas Building, 122 Michigan Avenue, Chicago.

Howard W. DuBois, of Philadelphia, has been spending a vacation mountain climbing in the vicinity of Laggan, in the Canadian Rocky Mountains park.

J. R. Finlay has become associated with Charles Head & Co., New York, as consulting engineer.

C. W. Hayes has resigned from the U. S. Geological Survey and will devote his time hereafter to professional work in connection with the Mexican oil industry.

Hiram W. Hixon has returned from Fairbank Lake, Worthington, Ont. His address is 251 South Forty-first Street, Philadelphia.

W. R. Ingalls has returned to New York from his trip to the West.

Waldemar Lindgren has been appointed chief geologist of the U. S. Geological Survey, succeeding C. W. Hayes.

## EMMONS MEMORIAL.

The committee named below has been formed by friends of Samuel Franklin Emmons, late of the U. S. Geological Survey, to consider the best method of perpetuating his name. It has been decided that the memorial to him shall take the shape of a research fellowship, to be known as the Samuel Franklin Emmons Research Fellowship of Economic Geology, which is to be administered by Prof. James F. Kemp, of Columbia University, New York. Subscriptions by his friends are invited to this fund, which the committee has fixed at \$25,000.

Members of the Society who desire to contribute to this fund will please communicate with the Treasurer, Benjamin B. Lawrence, 60 Wall Street, New York.

The committee consists of the following: George Otis Smith, H. L. Smyth, James Douglas, J. A. Holmes, James F. Kemp, F. W. Bradley, J. Parke Channing, Seeley W. Mudd, D. W. Brunton, H. Foster Bain, T. A. Rickard, B. B. Lawrence.

# Mining and Metallurgical Society *of America*

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## ANNOUNCEMENTS.

**Badge.**—The badge of the Society, officially adopted by the council, may be obtained from the Secretary at a cost of \$5 when made in gold, silver and blue enamel; \$20 when made in gold, platinum and blue enamel. The badge may be obtained either as a pin or as a watch-charm.

**Annual Meeting.**—The annual meeting of the Society will be at the Engineers' Club, New York, Tuesday, January 9, at 2 p. m. Members who do not expect to be present at this meeting are requested to forward to the Secretary their proxy made out in the names of one or more members who are likely to be present. The necessary form for this proxy is sent with this Bulletin.

**Ballots.**—At the meeting of the Council on November 27 three important questions of public interest were ordered to be submitted to vote by the membership of the Society. The questions upon which action is to be taken are reported in this Bulletin, and to them the careful attention of every member is urged. The polls will be open for 30 days (until January 8, 1912). All members of the Society resident in North America, or not more than one year absent from residence in North America, are entitled to vote. Ballots will be mailed contemporaneously with this Bulletin and all members eligible to vote are urged to do so promptly. In accordance with instructions by the Council, the Secretary makes the following explanations of the matters upon which ballot is to be taken:

**Memorial Re Judiciary.**—This matter was first brought to the attention of the Society in June, 1911, and has been referred to in Bulletins Nos. 36 and 42. It has been discussed orally by the New York section. The conception is to call the attention

of the President of the United States to the desirability of having upon the Supreme Bench at least one judge well acquainted with the mining industry. The memorial upon which action is to be taken by this Society is to be found in the report of the meeting of the Council on November 27, 1911, on a subsequent page of this Bulletin. The memorial that has been adopted by the Council is submitted to the membership of the Society for action upon the initiation of the Council.

**Bureau of Mines.**—Action of the Society is to be taken upon a proposed bill substituting a new organic law for the present law creating the Bureau of Mines, action upon this matter having been requested by the chairman of the Committee on Mines and Mining of the House of Representatives and also by the Director of the Bureau of Mines. This matter has been under discussion by the Philadelphia, New York and San Francisco sections and by the Council of the Society. (See reports in this number of the Bulletin.) Vote of the membership is to be taken upon a resolution initiated by the Council.

**Alaska Coal Lands.**—Action of the Society is to be taken upon resolutions expressing the opinion of the Society upon certain broad phases of the Alaska coal land question, together with some specific recommendations respecting the terms of leases if Congress determine to adopt the leasing system. This subject has been extensively discussed by the San Francisco, Philadelphia and New York sections. Vote of the membership of the Society is now to be taken upon resolutions passed by the Philadelphia section and amended by the Council.

W. R. INGALLS,  
*Secretary.*

## COUNCIL

Meeting, November 14th, 1911.

The council of the M. M. S. A. met in the board room at the Engineers' Club, New York, at 5 p. m., Nov. 14, 1911. The councillors present in person were Channing, Chance, Garrison and Ingalls. Mr. Ingalls represented B. B. Lawrence by proxy and J. A. Holmes represented R. H. Richards by proxy, made out to W. R. Ingalls, and assigned by him. Total number of councillors present in person and by proxy, 6, this constituting a quorum.

The minutes of the previous meeting having been sent to



all members of the council, upon motion, duly seconded, they were approved as submitted.

The Secretary reported that in compliance with article No. 11 of the by-laws of the Society on Oct. 4 he sent to all members entitled to vote a request for nominations for officers and councillors for 1912, the latter according to a division into districts previously approved by the council. The nominations made by the membership were canvassed on Oct. 25.

The Secretary further reported that the amendments to the constitution and by-laws, recently adopted, had failed to provide for the retirement of the present council in a body, but that its continuance being obviously incompatible with the constitution and by-laws as amended, he had assumed that the retirement of the present council was contemplated and had drawn up the nomination papers and ballot upon that assumption.

Upon motion by Mr. Garrison, seconded by Dr. Chance, the action of the Secretary in drawing up the nomination papers and ballot for an entirely new council and his report as to the nominations made were confirmed.

The Secretary exhibited a model of the badge of the Society, previously adopted, and stated that Tiffany & Co. had offered to make these badges in silver, gold and enamel, in lots of 25 ordered at one time, at \$6 each; in lots of 50 ordered at one time, at \$5 each; in platinum, gold and enamel, in lots of 25 or 50 ordered at one time, at \$20 each.

Upon motion by Dr. Chance, seconded by Mr. Garrison, the badge was adopted as the official insignia of the Society and the Secretary was authorized to contract with Tiffany & Co. for the manufacture of 50, to be sold to members of the Society upon order.

The Secretary called attention to the passage, on Sept. 19, 1911, of the resolution for the annual award of a medal by the Society. Upon motion by Mr. Ingalls, seconded by Mr. Garrison, the President of the Society was instructed to appoint a committee of three members of the Society to draft rules for the award of this medal and submit same to the council.

The Secretary reported that he had received resolutions from the Philadelphia section with respect to the Alaska coal land question. [These resolutions were printed in bulletin No. 41.]

After discussion of this matter, it was moved by Dr. Chance, seconded by Mr. Garrison, that the resolutions respecting the Alaska coal question adopted by the Philadelphia section be referred to a committee of three members of the council, to be

appointed by the President, with instructions to report at the next meeting of the council.

The President reported that a bill to improve the usefulness of the Bureau of Mines had been presented to the Society by the chairman of the Committee on Mines and Mining of the House of Representatives, through Dr. Holmes, with the request that the Mining and Metallurgical Society advise respecting the provisions of this bill.

Upon motion by Dr. Chance, seconded by Mr. Garrison, it was voted that a committee of three members of the council be appointed by the President to consider the proposed bill for enlargement of the powers of the Bureau of Mines, with instructions to report at the next meeting of the council.

The President read the following letter from Mr. H. V. Winchell:

"The death of Justice Harlan furnishes another opportunity for the mining interests to urge upon the President the appointment of a man in sympathy with and familiar with mining and smelting and the public land question from the Western standpoint. I have heretofore suggested that it is within the province of the Mining and Metallurgical Society of America to memorialize the President asking him to appoint such a man. I hope that such action will be taken now."

Upon motion by Dr. Chance, seconded by Mr. Garrison, it was voted that the President be instructed to appoint a committee of three members of the council to draft a memorial to the President of the United States upon the subject suggested by Mr. Winchell.

The President announced that he formally called a meeting of the council for Nov. 27, at 3 p. m., at his office.

There being no further business, the meeting, upon motion, duly seconded, was adjourned.

W. R. INGALLS,  
*Secretary.*

### Meeting, November 27, 1911.

A meeting of the council was held at the office of the President, 42 Broadway, New York, November 27, at 3 p. m. The members present were Channing, Chance, Garrison, Ingalls, Lawrence, Requa (representing R. H. Richards by proxy to W. R. Ingalls, assigned by the latter), and Winchell.

The meeting was called to order by the President. The Secretary called attention to the omission from his minutes of

the previous meeting of the action taken then upon the rules governing resolutions, this action having been as follows:

"It was moved by Dr. Chance, seconded by Mr. Garrison, that the set of rules governing resolutions adopted by letter-ballot of the Council in June, 1911, as reported in Bulletin No. 37, page 110, be re-adopted, and this motion was unanimously carried."

With the above addition, the minutes of the meeting of November 14, 1911, were, upon motion, duly seconded, approved as previously submitted by mail to the members of the Council.

The President stated that at the meeting on November 14, 1911, he had been instructed to appoint a committee consisting of three members of the Council to report upon certain matters before the Society and in accordance with that instruction had appointed himself, together with Messrs. Ingalls and Winchell. This committee had held two sessions at which Messrs. G. C. Stone and M. L. Requa had been present, by invitation, as advisors. The committee now reported as follows:

*Memorial to the President of the United States Respecting  
Judicial Appointments.*

It was brought to the attention of the Society by H. V. Winchell (see Bulletin No. 36, June, 1911), that it would be desirable to lay before the President of the United States a memorial asking for the appointment to the Supreme Court of at least one judge versed in mining practice. The importance of the questions in mining litigation that come before that court, involving the interpretation of the mining law and the establishment of new principles, is such that there ought to be upon the bench at least one justice who is by his early training and place of residence in sympathy with mining, and experienced in that industry. Recognizing the merit of this proposal, the following memorial has been drafted:

The President,

Sir:—The Mining and Metallurgical Society of America respectfully calls your attention to the importance of carefully considering the mining industry in its relations with the Federal courts. It is a fact known to all persons connected with this industry that the provisions of the mining law at the time of its passage were few and apparently simple, but with the advance in the knowledge of ore deposits it was found that these apparently simple provisions failed to cover many occurrences, and it has devolved repeatedly upon the court of last resort to interpret the fundamental law, with the result that the legal provisions governing mining titles and rights are today in major portion those that have been established by judicial decisions.

Few matters of greater importance, either in their financial aspect or in their bearing upon the welfare of large communities, come before the courts of the United States.



## MINING AND METALLURGICAL SOCIETY OF AMERICA

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At various times in our history there have been upon the United States Supreme Court justices of pre-eminent distinction, abundantly qualified by reason of their experience in all questions connected with the disposition and development of our public lands, to render decisions which can be justly looked upon as in every way equitable and calculated to promote the welfare of the mining industry.

*[The above third paragraph is omitted in the draft upon which the Society is requested to vote, the memorial submitted to the Society consisting of the three remaining paragraphs.]*

It is the request and hope of the Mining and Metallurgical Society of America that jurists of distinction and noted ability and experience in this and associated industries will receive the favorable consideration of yourself in connection with the filling of the vacancy which now exists.

The meeting expressed itself in favor of the proposal to present such a memorial, but there was some discussion centering upon the third paragraph of the draft.

Finally it was moved by Mr. Garrison, seconded by Mr. Ingalls, that the third paragraph be excised and that the remainder of the memorial be adopted as drafted, and this motion was carried unanimously.

Dr. Chance moved, Mr. Winchell seconding, that the memorial above adopted be submitted to the membership of the Society eligible to vote, for letter-ballot, the latter to be accompanied by a statement by the Secretary respecting the purpose of this memorial and a vote of "Yes" or "No" on its adoption to be asked. This motion was unanimously carried.

### *Bureau of Mines Bill.*

The President, in behalf of the committee, reported that it had profited from the discussion of this subject by the Philadelphia, New York and San Francisco sections, the opinions of which have been carefully taken into consideration, while Mr. Cornelius F. Kelly, upon invitation, had assisted the committee with legal advice. The draft for the bill submitted by the committee was based upon the latest draft submitted by Dr. Holmes (to the New York section, this differing from the drafts submitted by him to the Philadelphia and San Francisco sections). The committee retained Section 1 and Section 3 as drafted by Dr. Holmes, but made a substitution for his Section 2 and an addition to his Section 4, while Section 5 is wholly an addition made by the committee. The draft submitted by the committee was based upon the following principles:

1. That the scope of the Bureau of Mines should be enlarged so that its functions will certainly cover the preservation of health in mining as well as safety.
2. That the functions of the Bureau of Mines should be limited to the elucidation of fundamental principles and the study of questions broadly affecting the mining industry.
3. That governmental encroachment upon private enterprises should be prevented by the organic law.
4. That the engagement in private work by employees of the Bureau of Mines should be prohibited by the organic law.

## MINING AND METALLURGICAL SOCIETY OF AMERICA

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The draft for the bill presented by the committee is as follows:

### AN ACT TO ESTABLISH IN THE DEPARTMENT OF THE INTERIOR A BUREAU OF MINES.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby established in the Department of the Interior a bureau to be called the Bureau of Mines, and a director of said bureau, who shall be thoroughly equipped for the duties of said office by technical education and experience and who shall be appointed by the President, by and with the consent of the Senate, and who shall receive a salary of Six Thousand Dollars (\$6,000) per annum; and there shall also be in the said bureau such experts and other employees to be appointed by the Secretary of the Interior, on the recommendation of the director of said bureau, as may be required to carry out the purposes of this Act, in accordance with the appropriations made from time to time by Congress for such purposes.

Sec. 2. It shall be the province and duty of the Bureau of Mines, under the direction of the Secretary of the Interior, to conduct inquiries and scientific and technologic investigations concerning the mining, extraction, preparation, treatment and utilization of the mineral substances (including petroleum and allied substances) of the United States and its possessions, with a view to increasing the safety and preserving the health of persons engaged in mines, quarries and metallurgical works, and with a view to the elucidation of the conditions existing in the mining, quarrying and metallurgical industries; and concerning the explosives, fuels and other mineral and metal products belonging to or for the use of the government of the United States, with a view to their most efficient use; and to disseminate the information resulting from these inquiries and investigations, or from other sources, together with appropriate recommendations, in such manner as will best carry out the purposes of this Act.

Sec. 3. The director of said bureau, with the approval of the Secretary of the Interior, shall prepare, publish and distribute, under the appropriations made from time to time by Congress, reports of the inquiries and investigations with appropriate recommendations of the bureau concerning the nature, causes and prevention of accidents, and the improvement of conditions, methods and equipment, with special reference to health, safety and prevention of waste in the mining, quarrying and metallurgical industries; the use of explosives and electricity, safety methods and appliances, and rescue and first-aid work in said industries; the causes and prevention of mine fires; and other subjects included under the provisions of this act.

Sec. 4. Nothing in this Act shall be construed as in any way granting to any officer or employee of the Bureau of Mines any right or authority in connection with the inspection or supervision of mines or metallurgical plants in any State; nor as granting to the Bureau of Mines any right or authority to undertake any investigation or operation in behalf of any individual person, partnership, corporation or association except for the health and safety of persons employed in the mining, quarrying and metallurgical industries.

Sec. 5. No person who is regularly employed by the Bureau of Mines shall be permitted to undertake special engagements, or accept employment for compensation, from any person, association of persons, or corporation; nor shall the Bureau of Mines detail any such regular employee to perform such service except as above stated. Provided, that this prohibition shall not be construed to apply to such engineers or experts as may be connected with the said bureau in a consulting capacity, or in the investigation of any special matter, and whose principal professional practice is outside of such employment by the bureau.

After some discussion the report of the committee, upon motion by Mr. Ingalls, seconded by Mr. Lawrence, was adopted unanimously.

Mr. Ingalls moved, Mr. Lawrence seconding, that the bill adopted as above be submitted to the membership of the Society, eligible to vote, accompanied by a statement of the principles upon which it was based, for letter-ballot, "Yes" or "No."



*Alaska Coal Lands.*

The President, in behalf of the committee, reported that it had considered resolutions upon the Alaska coal lands adopted by the Philadelphia section (see Bulletin No. 41, pages 199-201). The committee recommended the following substitute for the resolutions adopted by the Philadelphia section:

1. It is essential for the proper development of Alaska that its coal fields be opened for commercial use without further delay.
2. There are now known to exist but two relatively small fields containing high-grade naval fuel, and inasmuch as the government now possesses no original source of such supply on the Pacific coast, it is desirable in the interests of national defense that a selected area of these fields be held and operated under the direct control of the government.
3. All rights which have accrued legally under statutes heretofore existing should be recognized.
4. If it be decided by the Congress that it is to the best interests of public welfare that coal lands in Alaska be leased, we recommend that the following conditions should be embodied in the leases:
  - a. These leases should be made for all the coal in the ground.
  - b. The royalty should be low and based on percentage of selling price of the coal at the mines.
  - c. The minimum annual production upon which royalty is to be paid should be nominal for the first two or three years after the execution of the lease in order to permit and encourage the installation of efficient and durable equipment. After that period the minimum production upon which royalty should be paid should increase more rapidly than the area increases. For example: the minimum production upon which royalty should be paid on a tract of 5,000 acres should be several times more per acre than for 1,000 acres. Such a plan would prevent the tying up of large areas of undeveloped coal territory.
  - d. A due-diligence and forfeiture clause to effect continuous work should be included in the lease.
  - e. Leasehold in coal lands should include all necessary timber, mining and surface rights.
  - f. Leases should not be given for less than 40 acres and in shape should be rectangular, their boundaries being east and west and north and south, and after the system of public surveys has been extended to Alaska and the land applied for is in a surveyed township, the unit areas of a lease should be those established by the government survey as subdivisions of the sections.
  - g. The tract of land embraced within a single lease should not be more than three times as great as its width.
5. It should be clearly recognized as a basic principle that the value to the nation of coal lands in Alaska lies more in their use for industrial, commercial and naval purposes than in the royalties to be derived therefrom, and it is desirable that the revenue obtained from coal royalties inure to the benefit of the territory.

After considerable discussion, Mr. Ingalls moved, Dr. Chance seconding, the adoption of the report of the committee, and this motion was carried, Mr. Lawrence not voting, and all the other members voting in the affirmative.

It being the sense of the meeting that the amendments made to the Philadelphia resolution did not alter its intention; that consequently the amended resolution could be immediately submitted to vote by the Society under the first of the rules governing resolutions and by-law 14, it was moved by Mr. Winchell, seconded by Mr. Garrison, that the action upon the Alaska coal land question be submitted to the membership of the Society, eligible to vote, for letter-ballot, "Yes" or "No." This motion was unanimously carried.



It was moved by Mr. Ingalls, seconded by Mr. Garrison, that publication of Bulletin No. 42 be delayed until report of this meeting could be incorporated and that the inauguration of the three ballots directed be not made until Bulletin No. 42 had been published, and this motion was unanimously carried.

There being no further business, the meeting was adjourned.

W. R. INGALLS,  
*Secretary.*

## MEETINGS OF SECTIONS PHILADELPHIA.

Upon the receipt of a telegram dated Nov. 8, 1911, addressed to the Secretary of the Philadelphia section by Dr. J. A. Holmes, of the Bureau of Mines, at Washington, expressing a desire to meet informally the members of the Philadelphia section of the Society for a conference upon an important public matter, the Chairman of the section instructed the Secretary to arrange hurriedly a conference for the evening of the 9th, at the Engineers' Club.

As the result of this request, a meeting was called at 8 p. m. with the following members present: Conner, Chance, Queneau, Sanders, Garrison, Lathrop, Penrose and Dr. Holmes.

Dr. Holmes stated that he had been requested by the Chairman of the Committee on Mines and Mining of the House of Representatives to prepare a bill for prompt submission, extending the functions of the Bureau of Mines in order to make its operations more satisfactory to western mining interests. Dr. Holmes stated that it was his desire as well as of the Chairman to obtain the views of the Mining and Metallurgical Society upon this important subject.

He submitted a printed copy of the original bill under which the Bureau was organized, and is now existing. He also presented a draft embodying some changes that it seemed desirable to incorporate into the new Act. The proposed draft was then taken up and, after discussion, was amended at a number of points, mainly as to expression and punctuation.

The proposed new bill, after revision, read as follows:

An Act to establish in the Department of the Interior a Bureau of Mines.  
Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That there is hereby established in the Department of the Interior a bureau, to be called the Bureau of Mines, and a director of said bureau, who shall be thoroughly equipped for the duties of said office by technical education and experience and who shall be

appointed by the President, by and with the advice and consent of the Senate, and who shall receive a salary of \$6000 per annum; and there shall also be in the said bureau such experts and other employees to be appointed by the Secretary of the Interior, on the recommendation of the Director of said bureau, as may be required to carry out the purposes of this Act, in accordance with the appropriations made from time to time by Congress for such purposes.

Sec. 2. It shall be the province and duty (function) of the Bureau of Mines, under the direction of the Secretary of the Interior, to conduct inquiries and technologic investigations concerning the mining, extraction, preparation, treatment and utilization of ores, fuels and mineral substances, with a view to (A) the saving of life, the economic and efficient development of the mining, quarrying and metallurgical industries in the United States; (B) to investigate the fuels and other mineral products belonging to or for the use of the Government of the United States, with a view to their most efficient use; (C) to disseminate information resulting from these inquiries and investigations, together with appropriate recommendations, in such manner as will best carry out the purposes of this Act.

Sec. 3. The Director of said bureau, with the approval of the Secretary of the Interior, shall prepare, publish, and distribute under the appropriations made from time to time by Congress, reports of the inquiries and investigations of the bureau concerning the nature, causes, and prevention of accidents, and the improvement of conditions, methods, and equipment, with special reference to safety and prevention of waste in the mining, quarrying, and metallurgical industries; the use of explosives and electricity, safety methods and appliances, rescue and first aid work in mining, quarrying and metallurgy; mine fires; and other subjects included under the provisions of this Act.

Sec. 4. For tests or investigations of fuels or other material authorized by the Secretary of the Interior, for the Government of the United States, a reasonable fee covering actual necessary expenses may be charged, according to a schedule submitted by the director and approved by the Secretary of the Interior, who shall prescribe the rules and regulations under which such tests or investigations shall be made and under which such fees shall be charged and collected. All moneys received from such fees shall be paid into the Treasury to the credit of miscellaneous receipts.

Sec. 5. That nothing in this Act shall be construed as in any way granting to any officer or employe of the Bureau of Mines any right or authority in connection with the inspection or supervision of mines or metallurgical plants in any State.

There being no further business, the meeting adjourned at 11 p. m.

F. LYNWOOD GARRISON,  
*Secretary of Section.*

## NEW YORK.

The November meeting of the New York section was held, after an informal dinner, at the Engineers' Club on Tuesday, November 14, at 8.30 p. m. The meeting was called to order by the Chairman, Mr. Stone. Those present were Messrs. J. T. Beard, Hans Behr, P. R. Bradley, R. M. Catlin, H. M. Chance, J. Parke Channing, J. R. Finlay, F. L. Garrison, J. A. Holmes, L.

D. Huntoon, W. R. Ingalls, S. J. Jennings, C. Kirchhoff, E. B. Kirby, H. H. Knox, H. S. Munroe, F. W. Parsons, R. Peele, H. A. Prosser, A. L. Queneau, S. F. Shaw, E. G. Spilsbury, G. C. Stone, A. R. Townsend, W. H. Weed and W. Y. Westervelt.

Before proceeding to the business of the meeting, the Chairman asked Mr. Kirby to make a few remarks regarding proposed changes in the mining law.

**E. B. Kirby.**—I would like to call the attention of the Society to a subject in which we are very much interested; that is, how to influence Congress to take steps towards a general revision of the mining laws and mining code of the United States. Those of you who have, like myself, taken an interest in the proceedings of the American Mining Congress will know that for some fourteen years we have been calling attention to the well known defects in our mining law and asking for specific remedies for this or for that other defect. This is true of all of us, of all of the mining journals and of all the mining societies. We all know that for years many of us have been afraid to urge a change by Congress for fear of politics, as we did not want to make a bad matter worse. However, it was decided by those interested, who secured the unanimous support of the Mining Congress, to abandon all this idea of piecemeal reform and simply ask Congress to undertake a general revision. The situation is as follows: A committee, of which I am Chairman, was empowered to take up with Congress the question of a resolution under which Congress will undertake this revision. We were unable to do anything with this plan last Summer because of an understanding among the members of Congress that no special legislation would be considered beyond the business that it had in hand, but they have promised that they will undertake a measure of this kind at the next session. The procedure which has been planned is that we simply request that they appoint—as they probably will, since we have the support of Senators, Representatives and Governors of western states—a committee with which our committee will confer, at which time we will make such suggestions as we would not venture to offer now. When we come down to the details this winter, we shall ask this congressional committee to plan a commission, to be carefully selected, and to consist of men who will have the confidence and support of the mining industry. The commission will then proceed to hold hearings in the principal centers in the West, and Alaska, and will call before it men skilled in the various branches of mining, prospecting, surveying, engineering, geology, mining litigation, and the history of mining laws. It will



thus profit by the best of experience in various sections of the country, and will then embody its recommendations in the form of a bill to Congress. If this plan is successfully carried out, this difficult problem will be solved in such a way as to permit the fullest suggestions. If they look with favor upon it at Washington, we will suggest that they apply to this Society and to the American Institute of Mining Engineers for men to fulfil certain functions, and also to the American Mining Congress, because these three bodies represent the organized mining industry. Along the line of these suggestions it seems to me that we shall probably secure the best result; I am glad of this occasion to explain to you what we are trying to do, so that if the request comes this winter, and I think it will, you will be prepared to consider it, and also to give any suggestions and advice.

**The Chairman.**—The subject first announced for this evening was the Code of Ethics, but I received a communication from the Secretary of the Society, stating that the executive committee of the council had requested this section to discuss a proposed new bill for the U. S. Bureau of Mines. I will now ask the President to tell us what action the Council has taken in this matter. \*

**J. Parke Channing.**—After a preliminary conversation with Dr. Holmes I communicated with the Philadelphia section and found that they had had an interview with Dr. Holmes and had discussed the matter. I also sent a telegram to the chairman of the California section asking him, if possible, to call an early meeting of that section to discuss it and look over the resolution proposed by Dr. Holmes. It was further resolved that the matter be left to a special committee of three of the council, to be appointed by the President, which committee is to report at the next meeting of the Council, which has been called for November 27. The Council will be pleased to have you discuss this evening the proposed enlargement in scope of the Bureau of Mines, which discussion will be of value to this committee which I shall appoint. I will now distribute a number of copies of this proposed law, as drafted by Dr. Holmes, to give you an idea of the subject to be discussed. The drafting of this act would be more in the province of an attorney than of an engineer, for the wording of the act would have to be very general and sufficiently broad to cover the particular things which the members of the Society think should be done by the Bureau of Mines, or should be within its jurisdiction. Perhaps, therefore, it will not be desirable nor particularly necessary for you to discuss the exact

wording of Section Two, but rather to take up the question as to what the Bureau of Mines should do. After you have determined that, it will then be very easy for the committee to formulate an article.

**H. M. Chance.**—I suggest that the members be informed as to the object of referring the matter to a committee, and the probable subsequent course.

**J. Parke Channing.**—The idea of referring this matter to a committee, which would be able to report in ten days, is that the report of this committee, and its recommendations to the Council, would then be in such shape that it could be submitted to the Society as a whole for ballot; therefore we would be able to get an expression of opinion by the whole Society, under the amended Constitution and By-Laws, within forty days after the suggestion is acted upon by the Council.

**J. A. Holmes.**—In response to the request of your President and Secretary, I am glad to explain, looking at it from the standpoint of the man in charge of it, how I regard the work of the Bureau of Mines. The persons who ought to know what the Bureau is doing are those who are actively engaged in mining. You may be interested to know that some four or five years ago we were endeavoring to organize an advisory board, and we requested the four national engineering societies to select two members each; President Roosevelt, who was enthusiastic about the matter, appointed such an advisory board to give advice as to what should be done. Congress, however, decided that it would not pay for any committee unless authorized by Congress, so the advisory board went out of existence. This shows the necessity of having the powers of the Bureau as broad as possible.

Perhaps I had best tell you what the Bureau is doing at the present time. We have inherited from the technologic branch of the Geological Survey three things: First, investigation of fuels for the United States Government. The Government spends about \$8,000,000 annually for fuel, practically all of which is purchased on specifications drawn up by the Bureau of Mines. Second, we have an appropriation from the Geological Survey of \$250,000 for the investigation of mine explosions. Third, Congress added another appropriation of \$160,000 for the establishment of mine rescue stations in different parts of the United States, at which we are now training miners in first

aid in mine accidents. Those are the functions which the Bureau has inherited.

One word further as to what people think the Bureau should do. Requests have been made that the Bureau take up the search for rare metals, treatment of tailings or dumps, and the recovery of material which has been practically thrown aside. Another request from California is that the Bureau should endeavor to overcome the antagonistic feeling towards mining held by farmers and others. My purpose is not to elaborate but to get suggestions from this Society as to what, in its judgment, should be done by the Bureau of Mines. If the organic law is narrow, then it will be impossible to get appropriations. The wisest plan is that suggested by your President at the meeting of the Council, that the Society try to get practical suggestions as to what ought to be or may be placed under the Bureau of Mines, not this year or next, but in the future.

**F. L. Garrison.**—I notice that Dr. Holmes' second draft is somewhat different from the one he decided on in Philadelphia (as printed on a preceding page of this Bulletin). Our understanding was that the suggestions we made were only tentative, but I find that he has brought in again the question of allowing the several states to make use of the Bureau of Mines. It was thought at the meeting in Philadelphia that this might infringe on the work of mining engineers and might more or less curtail their activities.

**J. Parke Channing.**—It seems to me that there are certain functions which a body like the Bureau of Mines can with propriety undertake, just as I can readily see a great many functions which will be unnecessary for it to fulfill. For example, I think it is hardly necessary for the Bureau to study the best method of concentrating chalcocite ore, or the best method of smelting pyritic ore in California, but such a subject as the retreatment of tailings from the various copper mills of the country might with propriety be one of its duties, for the reason that this is a very broad subject. A particular mining company might experiment for a long time on its tailings and not get the benefit of the experience which has been obtained by another mine, so I think it would be perfectly proper for the Bureau to take up the subject of leaching copper tailings. Another suggestion was made by Professor Irving of New Haven, that it should be the function of the Bureau of Mines to study the question of secondary enrichment. As it is, we have a geological



study of the secondary enrichment at Butte, Miami, and Ray, but we have no literature, or any monograph, on this subject as a whole. This question is of vital importance to the mining industry, copper as well as silver, and to a slightly less degree in the mining of gold. The Geological Survey has not done it and I think it is another thing which the Bureau of Mines might do with propriety.

**J. R. Finlay.**—It seems to me that there should be a sharp distinction between the general policy of the Bureau of Mines and that of the Geological Survey, which, I think, is now a little vague. The function of the Geological Survey should be to deal with the mining industry prior to actual mining, and the Bureau of Mines should deal with it after mining has begun, so far as it affects public interest, and so far as it brings out questions of interest to the public. It seems that if Congress would recognize those distinctions, and give the Director of the Bureau authority to follow out any investigations, it would prove a public benefit. It is pretty hard to look forward now and specify what investigations shall be made.

**S. J. Jennings.**—Clause 2, defining the duties and functions of the Bureau, seems to be not sufficiently broad to cover the subject of increasing safety. This should be the primary object of a Government bureau dealing with mining and metallurgical operations. Our purpose tonight is not to make definite suggestions as to what particular investigations the Bureau should start with, but to make recommendations assisting in the formulation of an organic law which shall give it as wide authority as possible. I would like the Bureau to investigate the safety of hoisting ropes for deep mines; another is the leaching of copper ores or tailings; another is the caving system of mining as applied to large bodies of ore.

**H. S. Munroe.**—Some vital questions should be studied in this country, but it is very desirable that the Bureau of Mines be authorized to collect information as to the manner in which certain mining and metallurgical problems are being solved in other countries. For example, in the whole question of utilizing and treating waste products we are very much behind the old world. A large and important field is the utilization of waste products in coke production and the economical production of coal. There are problems in deep mining which we are just encountering; there is the question of rock flow which we are just meeting in this country; and a good deal of experience can be gained from deep mines in Australia and India.

**J. R. Finlay.**—It occurs to me that the Bureau might take up the question of mine dust on the health of miners.

**S. J. Jennings.**—Another subject of investigation is damage by smoke. This has been a very sore point in nearly all of the western states.

**J. Parke Channing.**—Another subject discussed by the Council, outside of routine business, was the recommendation of laws governing the exploitation of the coal lands in Alaska. As a basis for this we had resolutions which had been adopted by the Philadelphia section. The Council requested that, just as in the Bureau of Mines question, this also be submitted to a committee of three, to make any modifications which it might think necessary in the resolutions of the Philadelphia section, and report them at a meeting on November 27. The Philadelphia section, we feel, is particularly competent to pass on this subject, as its members are very largely interested in coal. The Philadelphia section has felt the public pulse and has deduced from it that the coal of Alaska should not be exploited under the present method of ownership, but under the leasing system. The third subject discussed was a memorial to the President of the United States to appoint upon the Supreme Court a judge whose experience has been west of the Mississippi, and in mining litigation. Since the death of the late Justice Field, no member of the Supreme Court has had large experience in mining litigation.

Mr. Jennings requested that the resolution of the Philadelphia section be read.

**W. R. Ingalls.**—Before reading these resolutions I would like to say that last week I attended a meeting of the San Francisco section, the largest meeting yet held, 50 persons being present, and the Alaska coal lands were the theme for discussion that evening. The discussion in San Francisco took the form of a consideration of the broad principles of the case, that is, whether the Alaska coal lands should be operated under individual ownership or by Government ownership, or under lease. The gist of the opinion expressed was simply that something ought to be done. In the latter part of the evening, one of the guests was asked to make some remarks, which he did in a complimentary way to the Society and the meeting, and expressed the desire that members of Congress be invited to attend these meetings and profit from the flow of wisdom. Mr. Sanders stated, however, that if he were a member of Congress

he would have left the meeting with no clearer idea as to what to do than when he came. Assuming that the Alaska coal lands are going to be worked under lease, and discarding from our consideration any of the political controversies on one side or the other, a technical body like this could undoubtedly give Congress extremely valuable suggestions as to the specific terms on which a leasing system might be developed. The Philadelphia section, in its consideration of the subject, has attempted to do precisely that; it has attempted to be specific. The resolutions adopted are as follows: (Mr. Ingalls here read the resolutions as printed on pages 200 and 201 of Bulletin No. 41.)

**S. J. Jennings.**—The royalty should not exceed 10c. a ton if you want the coal lands in Alaska to be developed. There is not very much profit in it when you have to compete against fuel oil which can be landed on the coast at a very low figure; if the Government wants to develop the coal lands it ought to pay a bounty.

I move a vote of thanks to Dr. Holmes for taking the trouble of coming from Washington to attend our meeting. Motion seconded and unanimously carried.

The meeting adjourned at 11.15 p. m.

LOUIS D. HUNTOON,  
*Secretary of Section.*

### SAN FRANCISCO.

A special meeting of the San Francisco section was held in pursuance of a call signed by the chairman at the rooms of F. W. Bradley, in the Crocker building, on Friday, November 17, being preceded by a dinner at the Palace Hotel. The following members were present: Messrs. Christy, Bradley, Hersam, Foote, Cottrell, Lawson, Sizer and Read. In the absence of the Secretary, Mr. Thomas T. Read was appointed secretary pro tem.

The minutes of the meeting on Sept. 4 were read by the acting secretary. The chairman thereupon inquired whether there were any corrections or objections, and there being none, the minutes were ordered approved as read.

The chairman stated the object of the meeting, which, pursuant to a telegram received from the President of the Society, was to discuss the proposed draft of an act to establish in the



Department of the Interior a Bureau of Mines to take the place of the present act, this draft having been prepared by Director J. A. Holmes.

The chairman thereupon read a communication from Prof. J. C. Branner of Leland Stanford, Jr., University, and at the request of the chairman the acting secretary read letters from Messrs. F. J. H. Merrill and Theodore B. Comstock.

The chairman stated that he had wired back to Mr. Channing saying that he had called the meeting in compliance with his request, and had asked him to write suggestions, so that action by the various sections might be harmonious. No reply had been received to that telegram, as there was hardly time.

The chairman stated he had a letter from Mr. Holmes to the effect that he had been requested by the chairman of the Committee of Mines and Mining of the House of Representatives to draw up a draft of a new bill, and that this bill modified the original act creating the Bureau of Mines only slightly. The idea was that Mr. Holmes would like to have any suggestions that would help to improve the proposed act.

At the request of the chairman the acting secretary thereupon read the proposed draft, as follows:

"Be it enacted by the Senate and House of Representatives of the United States in Congress assembled, that there is hereby established in the Department of the Interior a Bureau, to be called the Bureau of Mines, and a Director of said Bureau, who shall be thoroughly equipped for the duties of said office by technical education and experience and who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall receive a salary of Six Thousand Dollars (\$6,000) per annum; and there shall also be in the said bureau such experts and other employees to be appointed by the Secretary of the Interior, on the recommendation of the Director of said Bureau, as may be required to carry out the purposes of this Act, in accordance with the appropriations made from time to time by Congress for such purposes.

"Section 2. It shall be the province and duty (function) of the Bureau of Mines, under the direction of the Secretary of the Interior: (a) to conduct inquiries and technologic investigations concerning the mining, extraction, preparation, treatment and utilization of mineral substances, with a view to the saving of life in the economic and efficient development of the mining, quarrying and metallurgical industries; (b) to investigate the fuels and other mineral products belonging to or for the use of the Government of the United States (and the governments of the several states within the United States), with a view to their most efficient use."

After a general discussion by the members present, Mr. Benjamin offered the following as a substitute for Clauses A and B in Section 2, and on his motion, seconded by Mr. Cottrell, the same was adopted, as follows:

"(a) To conduct inquiries and technologic investigations concerning the methods of mining, extraction, preparation, treatment, and utilization of the mineral substances of the United States and its possessions, with a view to their most efficient extraction and use, and particularly with a view to the safeguarding and saving of life in the economic and efficient development of the mining, quarrying, metallurgical and other mineral industries."

The acting secretary thereupon continued the reading of the proposed draft, and the section marked C in the original was amended to read as follows:

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"and (b) to disseminate information resulting from these inquiries and investigations *or from other sources*, together with appropriate recommendations, in such manner as will best carry out the purposes of this Act."

The words *or from other sources* were considered an important addition.

The acting secretary then proceeded with the reading of the proposed draft, through Section 3, which was amended to read as follows:

"Section 3. The director of said bureau, with the approval of the Secretary of the Interior, shall prepare, publish and distribute, under the appropriations made from time to time by Congress, reports of the inquiries and investigations and appropriate recommendations of the bureau concerning: (1) the nature, causes and prevention of accidents; (2) the improvement of conditions, methods and equipment, with special reference to health, safety and prevention of waste in mining, quarrying, metallurgical *and other mineral industries*; (3) the use of explosives and electricity, safety methods and appliances; (4) rescue and first-aid work in said industries; (5) causes and prevention of mine fires; (6) other subjects included under the provision of this Act.

The acting secretary thereupon read Section 4, as follows:

"Section 4. That nothing in this act shall be construed as in any way granting to any officer or employee of the Bureau of Mines any right or authority in connection with the inspection or supervision of mines or metallurgical plants in any State."

As Section 4 is identical with the corresponding section of the former act, it was approved as read.

On motion of Mr. Benjamin, seconded by Mr. Read, the motion was adopted that the entire proposed act as amended be transmitted to the President of the Society as the recommendations of this Section.

Mr. Read stated that he had promised to send reports of the proceedings to the members of the San Francisco section.

On motion of Mr. Lawson, seconded by Mr. Benjamin, a motion was adopted that the editing of this report be left to the chairman and the secretary.

On motion of Mr. Lawson, seconded by Mr. Read, a motion was adopted that the communications that were read before the meeting should be placed on file.

There being no further business before the meeting an adjournment was here taken.

THOMAS T. READ,  
*Acting Secretary of Section.*

## COMMUNICATIONS

## BUREAU OF MINES.

**E. G. Spilsbury** (Nov. 15, 1911).—The consensus of opinion at the last meeting of the New York section seemed to be in favor of extending the powers and jurisdiction of the Bureau even further than are conferred by the proposed act. I think, however, that we ought to sound a note of warning against the possibility of the Bureau's repeating the blunder publicly made in a paper read by one of its engineers at the meeting in Wilkes-Barre of the American Institute of Mining Engineers.

As you know, the mining engineers of the Wilkes-Barre section have for many years been studying to devise a proper method for mine filling, and several papers at that meeting—by Eli T. Conner and others—showed how much study had been devoted to this subject. They also brought out the difficulties of obtaining economically the proper material for the work; a material which would be not only fine enough thoroughly to fill all the chambers but would also—after freeing itself of the water with which it had been carried down—have consistency firm enough to stand up under the pressure without requiring heavy retaining walls.

Right after that, Mr. Holmes' engineer read a paper stating that after three weeks' investigation of the district around Wilkes-Barre he had been able to discover the existence of large areas of sandy material which he proposed, to the engineers who had been studying this question for many years, should be used for mine filling. As a fact, the possibility of utilizing this material had been recognized years ago, but after investigation it had been discarded owing to the fact that the character of the sand is such that the moment it is moistened it resembles quicksand and it cannot be packed to stand up, nor indeed can it be thoroughly drained from water without running away with the water. Notwithstanding this, the Bureau publicly announces to the people at large that it has discovered a cheap and available material in enormous quantities for mine filling, and the idea is promulgated that the most proficient coal mining engineers in the country do not know their business and have to be taught by a young Government employee, who discovers all this after a three weeks' examination, the first he has made in that region.

Now, if the Bureau is given unlimited powers to make investigations of this kind and publish such misleading results,



is it not going to persuade the uneducated mine owner in the West to adopt processes or methods which would be probably condemned by any good engineer who had made a special study of the requirements in a given locality, the adoption of which would probably result in financial disaster?

I, for one, do not think that the scope of the Bureau should be extended to include investigation of methods of mining, ore treating, and metallurgy, excepting in so far as the health and safety of the men engaged in the work is concerned. I do not think that it is their province to assume the teaching of mining and metallurgy in general, which, under the proposed Act they would have the right to do.

The individual operator is going to be greatly handicapped if he is using a certain process—probably equally good and safe as any publicly advocated and endorsed by the Bureau—should an accident happen on his property. It would be at once held up to the public that this accident might have been avoided if he had changed his methods and systems and adopted those recommended by the Bureau, and he might be unjustly mulcted in heavy damages by a jury who, without further investigation, would be apt to take the endorsement of the Bureau as infallible.

I do not think it likely that the Bureau employees will ever be able, in the casual study they will necessarily have to make of different metallurgical and mining questions, to attain the expert knowledge of these questions possessed by the engineers who have devoted years to their study.

Nobody wishes more than I do the success of the Bureau, but I also feel that this success will be attained only by the devotion of time and study exclusively to questions affecting the health and safety of the men. This latter—which is one of the most effective functions performed by the government bureaus abroad—appears, however, to be expressly forbidden to our Bureau under section 4 of the proposed act.

**H. S. Munroe** (Nov. 15, 1911.)—It seems to me desirable to obtain an expression of opinion from the members of the Society as to the scope of the work of the Bureau of Mines. It is very clear, of course, that the Bureau should not trespass upon the field of the Geological Survey on the one hand, nor upon that of the private practitioner on the other, but within its proper field there is still a large amount of debatable work which may be undertaken by the Government, or may perhaps be better carried on by private enterprise. The work now being done by the Bureau of Mines falls well within its proper and legitimate

field, although I have heard some unfavorable criticisms of the investigation in the value of fuels which now constitutes so important a part of that work. It is perhaps a question as to whether real investigation can be carried on as favorably under Government auspices as under a more rigid control of industrial organizations. There can be no doubt that investigations for increasing the health and safety of miners are a proper Government function, as such work is not likely to be undertaken by private means. I am not so clear as to the rescue station work, which, while it may well be initiated by the Government, should undoubtedly form a charge on mining operations and be conducted by mine officials, as is now the case in England. It is a serious question as to how far Government money should be spent for the development of any industry or even for the development of natural resources of the country. In Canada the Government has taken a very paternal view of its obligations in this respect and the Bureau of Mines, I believe, has used considerable money in work that might better have been done by private means. The mining authorities of England have pursued a very different policy in this respect. I would suggest among others the following questions that well might be asked of members of the Society:

1. Is it desirable that the Bureau of Mines should undertake such work as deep boring, or search for mineral in other ways?
2. Should the Bureau of Mines undertake to expose wild-cat operations by actual field examination?
3. Should the Bureau of Mines engage in actual mining operations, as, for example, to supply fuel for the navy and other Government departments, using such mines as experiment stations, models of mine equipment and mine organization?
4. Should the Bureau of Mines employ engineers to study mining operations and equipment in this and other countries with a view of preparing monographs of approved mine methods; or, in other words, should the Bureau undertake the preparation of an encyclopedia of mining?
5. Should the collection of mineral statistics be transferred from the Geological Survey to the Bureau of Mines?

Other questions of similar character will doubtless suggest themselves, but I offer these as examples of the kind of questions that may well be asked, and through which an intelligent expression of opinion may be obtained from the members of the Society.

**H. H. Knox** (Nov. 17, 1911).—In further reference to the subject of debate, "A Proposed Draft of an Act to Establish in the Department of the Interior a Bureau of Mines," at the last meeting of the New York section, I beg to offer the following observations.

The draft submitted to the members appears to me quite broad enough in its scope to embrace all legitimate functions of the Bureau, and to call for some restriction, rather than expansion of the field, with, however, one exception. Section 2, fourth line, reads, "With a view to increasing safety, economy and efficiency in the mining, quarrying and metallurgical industries." Lest the phraseology here should seem not to include such activities, not metallurgical, as investigations looking toward the utilization of coal slack and bituminous shale, the recovery of alkalis from their silicates, or the establishment of other mineral industries not enumerated in the foregoing quotation, I suggest that the words, "The mining, quarrying and metallurgical industries," be struck out and the words, "in their production," be substituted.

The functions of the Bureau are two-fold and distinct, viz. humanitarian and utilitarian. The former is included in the police power exercised by all governments and the scope of its activities is limited only by the public funds available for the purpose. Under this head are comprised all considerations of safety and health such as the causes and prevention of mine explosions, the use of electricity, hoisting and hauling, ventilation, miners' phthisis, etc. Under the second head, however, the powers of government are less obvious and here the individualist and the collectivist will find a wide field for dispute. Hence, it would seem expedient for the Society as a body to formulate a principle for the guidance of the Bureau in its *utilitarian* capacity, even though the declaration were not embodied in the proposed Act. Many will recall the criticisms so frequently leveled at the Geological Survey on the score of its propensities toward "obituaries," to emphasize general theory rather than results of practical application to particular mines, and the retort of the late S. F. Emmons to these strictures is pertinent to the matter in hand. Said he in substance, "The aim of the Survey is not to assist the private operator to work his property but to provide fundamental data and the solution of geological problems which it is then the duty of the mining engineer to turn to practical account." It is conceivable that in the course of time the Bureau may also be called upon to resist the clamor of private interests, of operators, manufacturers, process men, for tests, endorsements or other direct assistance. In some form,



therefore, the Society might well emphasize the conception that the Bureau, apart from the questions relating to safety and health, should direct its energies to the elucidation of fundamental principles rather than details, to methods rather than means, leaving all the practical development to the industrial operators. Conversely, let the Bureau aim to advance the mineral industry by all means which cannot be undertaken by private enterprise.

As perhaps covering the points here considered, I suggest that Section 2 of the draft be made to read about as follows:

"It shall be the province and duty of the Bureau of Mines, under the direction of the Secretary of the Interior, to conduct inquiries and technologic investigations concerning the mining, extraction, preparation, treatment and utilization of mineral substances, with a view to increasing safety and economy and to the establishment of the principles underlying their production . . . ."

In some such way the Mining and Metallurgical Society could realize its own purpose by defining more clearly than has been accomplished by the draft, the duties of the Bureau of Mines.

### PERSONALS

Albert Burch is in general charge of the interests of Bewick, Moreing & Co., in California.

J. V. N. Dorr has been appointed manager of the Mogul Mining Company, Pluma, South Dakota.

J. P. Hutchins is at present making his headquarters at St. Petersburg, Russia.

J. E. Spurr, it is announced, will become on January 1 second vice-president and advising engineer of the Tonopah Mining Company, of Nevada. He will devote all his time to the interests of the company.

George D. Stonestreet, of New York, has gone to Porcupine, Ont., where he will take charge of development for the Ross Gold Mines, Ltd., organized to take over the Ross claims in the Porcupine gold district.

### MEMBER ELECTED IN OCTOBER

Howe, Ernest . . . . . 77 Rhode Island Ave., Newport, R. I.  
Geologist.

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## ANNOUNCEMENTS.

**Committees.**—The President of the Society has appointed the following committee to formulate rules for the award of the annual medal of the Society: Henry S. Munroe, chairman; James F. Kemp, Arthur L. Walker.

**Badge.**—The badge of the Society, officially adopted by the Council, may be obtained from the Secretary at a cost of \$5 when made in gold, silver and blue enamel; \$20 when made in gold, platinum and blue enamel. The badge may be obtained either as a pin or as a watch-charm.

**Annual Meeting.**—The annual meeting of the Society will be at the Engineers' Club, New York, Tuesday, Jan. 9, at 2 p. m. The first session will be for the transaction of business, including the presentation of the annual address of the President and the reports of the Secretary and Treasurer. The second session will begin with a dinner (informal) at the club at 6.30 p. m. This will be the annual dinner of the Society. After the dinner there will be informal addresses and discussion upon technical subjects, similar to those that were so interesting at the last annual meeting, the program for which is being arranged by the executive committee of the Council. Members of the Society residing in New York are requested to notify Mr. George C. Stone, chairman of the New York section, of their intention to be present. All other members are requested to notify the Secretary of the Society.

**Erratum.**—Owing to a clerical error, paragraph "g" of Sec. 4 of the resolution respecting Alaska coal lands, on page 232 of Bulletin No. 42, was presented incorrectly. This paragraph should read as follows: "The length of a tract of land embraced within a single lease should not be more than three times as great as its width."

W. R. INGALLS,  
*Secretary.*

## MINUTES OF MEETINGS

### NEW YORK.

The December meeting of the New York section was held, after an informal dinner, at the Engineers' Club on Thursday, December 14, at 8.15 p. m. The meeting was called to order by the Chairman, Mr. Stone. Those present were Messrs. H. M. Chance, J. Parke Channing, R. T. Cornell, J. R. Finlay, L. D. Huntoon, W. R. Ingalls, S. J. Jennings, H. H. Knox, E. B. Kirby, F. W. Parsons, H. M. Payne, D. M. Riordan, G. S. Rice, E. G. Spilsbury, S. F. Shaw, G. C. Stone, O. Sussmann, B. Stoughton and A. H. Wethey.

The minutes of the previous meeting were approved, without objection, as printed in the Bulletin.

The Chairman explained that all three of the subjects proposed for discussion that evening related to matters on which the Council had taken formal action, in fact the questions were now before the Society on ballot. The only effect of the discussion would be, therefore, to influence votes, while affording topics for informal exchange of ideas.

On the first topic, a memorial to the President respecting appointment to the vacancy on the Supreme Court, the Chairman asked Mr. Channing to review the discussion that occurred on this matter while before the Council.

Mr. Channing thereupon explained that the question was first brought to the attention of the Council by a communication from H. V. Winchell, who, however, was not alone in his idea. Many members of the Society recall the day when Mr. Justice Field was upon the Supreme Court of the United States, and realize the supreme wisdom of the decisions handed down by him. Mr. Channing announced that it was the almost unanimous feeling among the Council, together with those consulted, that it is extremely desirable to have one man on the bench who understands mining law. Although the present justices are men of high talent, yet none of them excels in mining and land law; in some recent litigation the Supreme Court seems to have been uncertain as to what were the facts and the law in the case. Inasmuch as under present conditions the mining law practically has to be determined by the Supreme Court, the Council felt that if one man specially versed in mining law were on the bench, who could write the decisions of the court on cases of that nature, it would be a great improvement over present conditions.

The Chairman then called for dissenting opinions, and in



response H. H. Knox voiced his objections. His view was that no justice of the Supreme Court should be required to possess special knowledge of any particular branch of law. The function of the court is to consider the law itself and to pass on the legality of action by inferior courts. Mr. Knox could not see wherein it would be of any benefit for one justice to be specially familiar with mining law.

The chairman, replying to Mr. Knox, pointed out that the mining law, as it stands, consists chiefly of the decisions of the Supreme Court, and that experience had proved that these decisions were much more satisfactory while one of its members was specially conversant with the subject. If the country had a strict, definite law on the subject, interpretation would be simple, but the actual law does not apply to more than one case in a hundred.

Mr. E. B. Kirby stated his conviction, based on many reasons, that the opinions of the Society meet with a great deal of deference and respect at Washington. He also believes that a suggestion of this kind would not only be carefully considered but it would carry great weight because of the certainty that western men and newspapers would rise enthusiastically and hurrah for it. He felt sure that just now the administration would do anything to please the West, and that the present is a psychological moment for action by the Society.

Introducing the second subject for discussion, the revised act to establish a Bureau of Mines, W. R. Ingalls, upon request, described wherein the ideas of the Council had differed from those previously outlined by Dr. Holmes. The principal change proposed by the Council is to enlarge the scope of the Bureau's activities in the direction of improved conditions as to health and safety of mining and metallurgical workers. In regard to expansion of the Bureau's activities in other directions, the Council was strongly opposed to any provision permitting the Bureau to undertake investigations which could equally well be conducted by individual engineers.

The sense of the meeting was unanimously in support of this idea.

Replying to a question by E. B. Kirby as to whether the proposed revised act defines clearly between the fields of the Geological Survey and of the Bureau of Mines, to the satisfaction of both departments, Mr. Channing explained that the Council had made no attempt to suggest a solution of this question.

In further explanation of the purport of the amended act, W. R. Ingalls stated that Congress, as a representative of the

people, can, of course, do whatever it pleases, providing it does not run against the Constitution. Congress may at any time it sees fit require either the Geological Survey or the Bureau of Mines to examine and report for it on anything. The main object of such an organic law as this is to square the Director of the Bureau with the Comptroller of the United States, who audits all bills. If the Director engages in work or uses appropriations that have been made by Congress with more or less indefinite directions, there is always the likelihood that the Director may find it necessary, or may desire, to stretch the construction of the appropriating act. Perhaps he does not know precisely how far he can go. In that contingency he comes up against the Comptroller, who may refuse to pass his bills; hence it is sought to make the organic law sufficiently broad to permit action that may be desirable or necessary.

H. H. Knox asked for information as to the legality of the tests that were conducted in California on a large scale by the Government on the recovery of black sands and the electric smelting of iron therefrom. The proposed act would not permit the Bureau of Mines to undertake such an investigation, but Mr. Ingalls pointed out that this particular work was conducted under special appropriation by Congress. As to more purely scientific studies, such as the chemical method of distinguishing pyrite from marcasite, proposed some years ago by the Geological Survey, Mr. Ingalls believed that these would be legal under the revised Act.

The subject of Alaskan coal lands was next introduced. G. S. Rice stated his belief that while the proposed north-south and east-west system of subdivision would afford certain conveniences, in some cases the topography of the district might make it advisable to adopt some other system, and he thought that some alternative should be offered in such cases.

Discussion here arose as to the propriety of the Government's operating coal properties of its own, and precedents were named to prove that this would not be a novel departure. Mr. Spilsbury then pointed out that the proposed regulations, the nucleus of the present discussion, had been entirely conditioned on the Government's leasing the coal lands.

The sense of the meeting was distinctly in favor of the Alaska resolutions formulated by the Council.

On motion, the meeting adjourned at 10.30 p. m.

LOUIS D. HUNTOON,  
*Secretary of Section.*

## SAN FRANCISCO.

A special meeting of the San Francisco section was held Dec. 19, 1911, at 1032 Crocker Building, in pursuance of the call by the Chairman, copies of which were mailed to all members of the Section. The following members were present: Messrs. Christy, Burch, Hersam, Lawson, Bradley, Read, Clevenger, and Bain.

The Chairman announced that the meeting had been called at the request of the President of the Society to consider questions now before the Society and presented by the Council.

Preliminary to their consideration Mr. T. T. Read read the minutes of the meeting of the Council held November 29, as printed in Bulletin 42 of the society.

**Memorial to President.**—The proposed memorial to the President of the United States regarding appointment to the Supreme Bench was taken up. After informal discussion it was moved that it was the sense of the meeting that the memorial as submitted after letter held be approved, and further that the Council be requested to select and submit to the members names of persons who might properly be recommended for the position, in order that the Society select one upon whom it could unite in making a recommendation.

**Bureau of Mines.**—The subject of the proposed change in the law governing the U. S. Bureau of Mines was taken up and the discussion and communications appearing in Bulletin 42 were read. It was moved that it was the sense of the meeting that the draft of the act relating to the Bureau of Mines (appearing on page 231 of Bulletin 42 of the Society) was satisfactory and be approved.

**Alaska Coal Mines.**—The various questions relating to Alaska coal lands were taken up and discussed fully. Attention was called to the resolutions on the subject prepared by the Philadelphia section, and published on page 31 of Bulletin 36 of the U. S. Bureau of Mines.

In view of the action of the Council (see Bulletin 42, page 229) in re-adopting, on motion of Dr. Chance, seconded by Mr. Garrison, the rules governing resolutions and the further action of the Council in approving the report of its committee relating to publicity of matters discussed before local sections (page 79, Bulletin 36), in which report it is stated: "We are unable to recommend, however, that any section shall have the right to



make public its conclusions upon any matter, under any circumstances," it was moved that the San Francisco section, while surprised at the action of the Philadelphia section and the lack of objection by the Council, heartily approves not only of the action itself but this establishment of another precedent along the lines so long advocated by the San Francisco section.

Upon motion, the form of the resolution relating to Alaska coal lands as passed by the Council, was adopted.

**Revision of Mining Law.**—A letter from the committee upon the "Revision of the Mining Law" was read and extensively but informally discussed.

A report from the Chairman with regard to a meeting of local representatives of the engineering societies to consider the project for an engineering congress in connection with the Panama Pacific Exposition, was received and approved.

Upon motion, the Chairman was instructed to appoint a program committee for the local section, and the schedule of regular meetings for 1912 was announced as follows: Feb. 4, May 6, Sept. 2, Dec. 4.

Adjourned subject to the call of the Chairman.

H. FOSTER BAIN  
*Secretary of Section.*

## COMMUNICATIONS

### REVISION OF MINING LAW.

The committee on revision of the mineral land laws of the United States, consisting of H. V. Winchell, chairman; C. W. Goodale, and M. L. Requa, has issued the following letter to all members of the Society, requesting expressions of opinion on the questions involved:

The Committee on Mining Law has decided, after consideration of the subject, to attempt to gain an expression of opinion from the members of the Society and from others whose interests and experience qualify them to speak upon some of the main questions involved. That a general revision should be undertaken is admitted on all hands; that it will come in time is certain; and that it is likely to be soon may be judged from the wide attention now being given to the subject. Such revision has been urged by committees of mining congresses and public organizations of various kinds; it has been recommended

by the Director of the United States Geological Survey, by Secretaries of the Interior and in Presidential messages. Special committees of the Congress have had the matter under advisement; and in many parts of the country the general inadequacy and many absurdities of our present system have become so irksome as to create a widespread demand for an entire new law. The old law has been so construed, amended and revised by judicial interpretation that it has become almost impossible for the courts themselves to decide what it really means; and no two lawyers agree on all important points. In many districts mining companies have entered into agreements for the purpose of escaping from the litigation which is almost inevitable under the present law, and there is thus a lack of uniformity in actual practice throughout the West.

With the possibility of an attempt at such revision along lines that may work injustice and injury to existing titles, it is a matter of the greatest moment to all mining engineers and others interested in mineral lands, that any statutes proposed for enactment shall be those best calculated to encourage development of our resources, and at the same time wisely and truly to conserve and prolong our mineral industry and protect property rights already acquired in good faith under present statutes. It must be our business to see to it that no unwise experiments are tried in the field of legislation, but that the best brains of the profession shall give to the framing of a new law that careful study and broad consideration which are justified and demanded by its importance.

It is quite possible that the average owner of patented lands may not realize the extent to which even his interests may be affected in case of the passage of legislation that has been already suggested by the believers in extreme conservation measures and in the sovereign rights of the Federal Government. It may be somewhat of a shock to him to learn that it is seriously maintained by some that "the government of the United States has never waived its right to the precious metals"; and that "in states where the ownership of the land has been vested in the Federal Government the ownership of the precious metals lies with the nation, and that as against the Government no person has a right to the gold and silver in any lands in the United States, unless this right has been specifically granted to him in the deed of conveyance."

Indeed, this same theory is even extended to all minerals, and in some of the English colonies the government has resumed jurisdiction over patented lands and the minerals contained therein, and has declared them open to exploitation by others

if their owner does not himself take out a permit or a lease to explore and mine. In a similar way it is maintained that the Government of the United States "might with considerable justice claim all mineral in all lands alienated under the agricultural land laws since the development of the government policy in the fifties and sixties, which required the reservation of all mines and mineral lands to the government." And it is said that "a legislative assertion on the part of the government of its right to all minerals in agricultural alienations since that time would give to every man what he swore he was getting, but no more. It would further have the effect of automatically cleaning the record of all land frauds involving mineral values." (Quotations are from Reports on Mining Laws of Australia and New Zealand by Special Commissioner A. C. Veatch, Washington, 1910.)

In view of the possibility of the enactment of even such revolutionary and radical legislation it is a matter of the greatest importance for us to have before us the views of those of our profession who have studied this subject abroad as well as at home, and who are perhaps able to distinguish clearly the fundamental and vital principles which constitute the basis of our American law and upon it build a consistent, harmonious and modern structure.

With this end in view the Committee requests as prompt a reply as possible to this communication. It invites suggestions and discussions of general nature as well as upon single and special matters. To the following questions we particularly desire answers and arguments as fully or as briefly as the writer chooses, in order that the skeleton of a bill may be prepared upon which there may be some unanimity of opinion. The questions are as follows:

1. Classification of lands and segregation by the Government of all minerals from surface rights.

2. Nature of the possessory right. How shall mining rights be initiated? How should they be perpetuated, and how terminated?

3. Shall mineral lands be permanently alienated or leased? Do you advocate different provisions for the precious metals or shall coal, iron ore, petroleum and other minerals be treated alike?

4. If the present system of alienation of title is retained, shall we still keep the extra-lateral right principle?

Your committee already has decided views upon many of these questions, but wishes to frame a bill which will meet with the support of the majority of our members. Suggestions will be welcomed on any phases of the subject, even though they are



not covered by the questions here propounded. It is the desire of the Committee that no publication be made of this or others of its communications until some report is prepared and submitted for consideration and amendment.

HORACE V. WINCHELL,  
505 Palace Bldg., Minneapolis, Minn. *Chairman.*  
November 27, 1911.

## OTHER SOCIETIES

### American Institute of Mining Engineers.

During the recent visit of the Institute to Japan, Dr. R. W. Raymond, the former secretary and present secretary emeritus, was decorated by the Emperor with the Order of the Rising Sun in recognition of his services to the mining industry of Japan.

### American Society of Mechanical Engineers.

On the 70th birthday of Col. Edward D. Meier, President of the American Society of Mechanical Engineers, which coincided with the meeting of the society in Pittsburg last May, a number of the members united in presenting him an illuminated address of congratulation. At the same time he was asked to give sittings for his portrait. This portrait has just been finished and is on exhibition at the rooms of the society at the Engineering Societies Building, New York.

Edward Daniel Meier was born at St. Louis, Mo., May 30, 1841, and graduated from Washington University, St. Louis, and from the Royal Polytechnic College at Hanover, Germany. This was followed by an apprenticeship at the Mason Locomotive Works, Taunton, Mass. He served with credit during the civil war. During the 20 years following the civil war, Colonel Meier was associated successively with the Kansas Pacific Railway, Illinois Patent Coke Co., Meier Iron Co., St. Louis Cotton Factory and Peper Hydraulic Cotton Press. In 1884 he organized the Heine Safety Boiler Co., which introduced into the United States the water-tube boiler of that name, and has been its president and chief engineer ever since. Also he was responsible for the introduction of the Diesel engine into this country, and until 1908 was engineer-in-chief and treasurer of the American Diesel Engine Co. He is a past president of the American Boiler Manufacturers' Association, and of the Machinery and Metal Trades Association.

A strong feature of Colonel Meier's presidency of the So-

ciety of Mechanical Engineers has been the broadening and deepening of the interest of the members, mainly through his active personal work. He was especially active in promoting the system of frequent local meetings of members. Another feature of his administration has been the development of the spirit of co-operation with sister societies, all tending to the solidarity of the engineering profession in distinction from the self-contained policy of a society growing without thought of its neighbors.

## PERSONALS

Ralph Arnold, of Los Angeles, returned to New York, Dec. 7, from a short trip to Trinidad, where he had been examining prospective oil lands for American interests.

Waldemar Lindgren gave a course of lectures in economic geology at the Massachusetts Institute of Technology during November and December.

Frank C. Loring, with two assistants, is examining the St. Anthony mine, Sturgeon Lake, Ontario.

S. F. Shaw has removed from Los Angeles, Cal., to New York, and will continue examination and consultation work.

H. W. Turner is making a geological study of the Ufaiei estate near Ekaterinburg, Russia.

H. V. Winchell lectured to the Geological Club, University of Minnesota, Dec. 7, on "Secondary Enrichment of Ore Deposits."

## CHANGES IN ADDRESS.

Arnold, Ralph.....	700 H. W. Hellman Bldg., Los Angeles, Cal.
Buckley, E. R.....	1364 Peoples' Gas Bldg., Chicago, Ill.
Du Bois, H. W.....	302 Harrison Bldg., Philadelphia, Pa.
Hays, C. W.....	Tampico, Tamps., Mexico
	Gen. Mgr., Exploitation Dept., Cia. Mexicana
	de Petroles, "El Aguila," S. A.
Melzer, G. E.....	Baker, Ore.
Shaw, S. F.....	136 Liberty St., New York
Wheeler, Shelton K.....	R. F. D. 2, Box 114, Billings, Mont.

# Mining and Metallurgical Society *of America*

CONSTITUTION      BY-LAWS  
RULES  
OFFICERS              MEMBERS

April 1, 1911.

505 Pearl St., New York.



## OFFICERS FOR 1911.

*President*, J. PARKE CHANNING, 42 Broadway, New York.

*First Vice-President*, F. W. BRADLEY, Crocker Bldg., San Francisco, Cal.

*Second Vice-President*, CHARLES W. GOODALE, Butte, Mont.

*Secretary*, } W. R. INGALLS, 505 Pearl St., New York.  
*Treasurer*, }

*Executive Committee*, MESSRS. H. M. CHANCE, J. PARKE CHANNING,  
W. R. INGALLS, B. B. LAWRENCE, R. H. RICHARDS.

## COUNCIL.

Districts 1, 2, 3.—New York City.

B. B. Lawrence, 60 Wall St.....Retires January, 1912.

J. Parke Channing, 42 Broadway.....Retires January, 1913.

W. R. Ingalls, 505 Pearl St.....Retires January, 1914.

District 4.—New York, New England and Eastern Canada.

R. H. Richards, Boston, Mass.....Retires January, 1914.

Districts 5, 6.—Pennsylvania, New Jersey and Ohio.

H. M. Chance, Philadelphia.....Retires January, 1912.

F. L. Garrison, Philadelphia.....Retires January, 1914.

District 7.—Delaware, Maryland and District of Columbia.

W. Lindgren, Washington.....Retires January, 1912.

District 8.—Michigan, Wisconsin and Minnesota.

H. V. Winchell, Minneapolis, Minn.....Retires January, 1914.

District 9.—Indiana, Illinois, Iowa, Missouri and Kansas.

E. R. Buckley, Rolla, Mo.....Retires January, 1912.

District 10.—Southern States.

Joseph Hyde Pratt, Chapel Hill, N. C.....Retires January, 1913.

District 11.—Northwestern States, Alaska and British Columbia.

C. W. Goodale, Butte, Mont.....Retires January, 1913.

District 12.—Colorado and New Mexico.

Philip Argall, Denver, Colo.....Retires January, 1914.

Districts 13, 14, 15.—Utah, Nevada, California, Arizona and Mexico.

F. W. Bradley, San Francisco, Cal.....Retires January, 1912.

Leonard S. Austin, Salt Lake City.....Retires January, 1912.

S. B. Christy, Berkeley, Cal.....Retires January, 1913.

## OFFICERS OF SECTIONS.

### SAN FRANCISCO.

S. B. Christy,  
*Chairman.*

H. F. Bain,  
*Secretary.*

### NEW YORK.

Geo. C. Stone,  
*Chairman.*

E. G. Spilsbury,  
*Vice-Chairman.*

A. L. Walker,  
*Secretary.*

### PHILADELPHIA.

R. H. Sanders,  
*Chairman.*

F. Lynwood Garrison,  
*Secretary.*

## CONSTITUTION.

### 1—NAME.

The name of the association shall be MINING AND METALLURGICAL SOCIETY OF AMERICA.

### 2—OBJECTS.

The society shall have for its objects the conservation of mineral resources, the advancement of mining and metallurgical industries, the better protection of mine investors and mine workers, the increase of scientific knowledge, and the encouragement of high professional ideals and ethics.

### 3—MEMBERSHIP.

The society shall comprise honorary members, and members who must be qualified by knowledge, experience, and honorable standing to advance the objects of the society, and shall be proposed for, and elected to, membership as provided in the by-laws of the society.

### 4—MEMBERS.

All interests in the property of the society of persons resigning, or otherwise ceasing to be members, shall vest in the society. No member or officer shall receive salary, compensation, or emolument unless authorized by the by-laws, or by concurring vote of two-thirds of the executive council. Members residing for a year or more beyond the limits of the United States, Canada and Mexico, shall not be entitled to vote nor to hold office during the period of such residence.

### 5—OFFICERS.

The affairs of the society, subject to the provisions of the constitution and by-laws, shall be managed by an executive council of not less than fifteen councillors, who shall hold office for the prescribed term or terms, and who shall elect from their own number a president, not less than two vice-presidents, a secretary and a treasurer, who shall hold office for one year, or until the close of the meeting at which their successors in office are elected, and who shall be eligible for re-election. Additional officers may

be elected by the executive council from time to time if necessary for the purposes of the society.

### 6—ANNUAL MEETING.

The annual meeting of the society shall be held on the second Tuesday in January of each year. One-third of the members, present in person or by proxy, shall constitute a quorum for the transaction of business.

### 7—RULES.

The society may adopt by-laws, rules and regulations for the conduct of its business, provided that these are in harmony with this constitution, and may provide different methods for amending or repealing such by-laws, rules and regulations.

### 8—AMENDMENTS.

Amendments to the constitution may be presented at a regular or business meeting of the society; and if endorsed by the council, or in writing signed by at least twenty members, a copy of such proposed amendment shall be sent to all entitled to vote, accompanied by comment by the council if it so elects, at least thirty days in advance of a second meeting called for its consideration; at which meeting the amendment may be amended as to wording but not as to intent, and then shall be submitted to a final vote by sealed letter ballot sent to all members; the polls shall be open for sixty days, and for the adoption of the amendment a majority of those entitled to vote shall be required to have been recorded in the affirmative; provided, however, that a negative vote comprising a majority of the votes cast shall defeat the amendment. If the necessary vote for adoption or for rejection is not secured on the first ballot, the council shall order the sending of a second ballot by registered mail to members who have not recorded their vote; and in such case, so many of these second ballots as have been received by members, if not voted within a further period of sixty days shall be counted as votes cast in the affirmative. The ballots shall be voted, canvassed and announced as provided in the by-laws.



## BY-LAWS.

### 1—ADMISSION TO MEMBERSHIP.

A candidate for membership or two members proposing him shall submit, in such form and in such detail as may be prescribed in the rules and regulations of the council, a record of his training and practice. The candidate must have had eight years' practical or professional experience, including not less than five years in positions of responsibility in mining or allied lines of work. Graduates of approved engineering schools shall be credited with one-half the time prescribed for graduation. The candidate must be endorsed by three or more members who shall further certify in writing as to his qualifications for membership. These statements must be based on long or intimate personal knowledge, and shall be submitted in such manner as the council may direct. The names of the candidates, after approval by a duly appointed committee of the council, shall be submitted to all members of the society entitled to vote, with the request that said members of the society present in writing, promptly, any objections that they may have against a candidate on the list. Thirty days after the mailing of the list, the committee of the council shall consider the communications received from members of the society for secret letter ballot. The affirmative votes of a majority of the council shall be required to elect, but three adverse votes, received within thirty days, shall be sufficient to defer the election of any candidate, and the council may include the name of any such candidate on the ballot for any subsequent election of members. The application of any candidate shall be considered as pending unless it be withdrawn, or unless by a majority vote of the council the candidate be rejected. A candidate may renew his application a year or more after his rejection.

### 2—ADMISSION TO HONORARY MEMBERSHIP.

Honorary members, not to exceed ten in number, must be proposed in writing, setting forth at length the qualifications of the candidate, and signed by at least twenty members of the society. The candidate must be elected by vote of the council which shall be by sealed letter ballot. One dissenting vote shall defeat such election. Honorary members are not entitled to vote nor to hold office and shall not be required to pay initiation fees nor annual dues.

### 3—SUBSCRIPTION TO CONSTITUTION AND BY-LAWS.

All elected candidates shall be duly notified, and shall subscribe to the constitution and by-laws in such form as the council may direct. This latter provision shall not apply to honorary members.

### 4—INITIATION FEE.

There shall be an initiation fee of twenty-five dollars for each new member after the total membership shall have reached two hundred and fifty.

### 5—ANNUAL DUES AND LIFE MEMBERSHIP.

The annual dues shall be ten dollars, payable in advance on the first day of January of each year. The council shall permit any member, not in arrears, to become a life member on payment of a sum deemed adequate for the purpose by the council, and based on his expectation of life according to reliable tables of mortality. Such life membership and initiation fees shall be invested, and the income only shall be applied to the current expenses of the Society.

### 6—RESIGNATIONS.

Any member, not in arrears in payment of dues, may terminate his connection with the society by sending his resignation in writing to the secretary.

### 7—DISCIPLINE.

The membership of any person in the society may be suspended or terminated for reasons of weight by a four-fifths vote of the executive council. Notice of such intended action shall be sent to such member by registered mail, and action shall not be taken for at least thirty days after the receipt of this notice by such member. A member suspended or expelled may demand a sealed letter ballot sustaining the action of the council. This ballot shall be sent to all members entitled to vote and may be accompanied by a statement signed by the council or a committee thereof, and by a statement on behalf of the accused of not more than one thousand words, or not exceeding in length that prepared by or for the council. A majority of the votes received within thirty days shall be required to reverse the action of the council.

### 8—ELECTION DISTRICTS.

The executive council shall from time to time divide the territory occupied by the membership into fifteen geographical districts to be designated by numbers. Each of the districts shall be, as nearly as practicable, contiguous territory; and each shall contain as nearly as practicable an equal number of members. The council shall announce such division to the society three months before the annual meeting. There shall be at any one time not more than

## MINING AND METALLURGICAL SOCIETY OF AMERICA

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fifteen councillors, one from each district, whose term of office shall be so arranged that five of them shall retire each year.

### 9—NOMINATIONS.

Three months before the annual meeting the secretary shall send a nomination ballot to each member of the society in the districts for which new councillors must be elected, with the request that he shall nominate three members, in such manner as the council may direct, as candidates for councillor to represent his district. Nominations shall be received for twenty days when the polls shall be closed. Sixty days before the annual meeting the secretary shall prepare a ballot, containing in and for each of these districts not less than three names, which shall be in each case those receiving the largest number of nominating votes before the closing of the polls. This ballot shall be mailed to each member of the society entitled to vote, who may vote for one councillor in each district, having the right to substitute names not on the list, and to cast not over three votes for a single candidate, provided that the total number of votes cast by such member shall not exceed the total number of vacancies to be filled. The ballot shall be signed, sealed and voted as prescribed in by-law 16.

### 10—CANVASSING BALLOTS FOR COUNCILLORS.

At noon of the first day of the annual meeting the polls shall be closed and the ballots counted by tellers appointed by the President. Councillors shall not be eligible for such appointment. The candidate in each district, receiving the largest number of votes, shall be elected. In case of a tie the president shall cast the deciding vote.

### 11—COUNCILLORS.

The term of office of a councillor shall begin immediately upon election. Vacancies occurring at any time in the council may be filled until the next annual election by a majority vote of the remaining members. At the next annual election new councillors shall be elected to fill such vacancies for the unexpired term of office only.

### 12—OFFICERS.

The officers of the society, as provided in the constitution, shall be elected at the annual meeting, or whenever a vacancy occurs, by a majority vote of the council. Their respective terms of office shall begin at the close of the meeting at which they are elected. For reasons of weight any office, except that of councillor, may be declared vacant by a two-thirds vote of the council. The duties of the several officers shall be such as usually attach to the office, or



## MINING AND METALLURGICAL SOCIETY OF AMERICA

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such as may be determined by the council. The council may delegate its powers to persons or committees, and may make such rules and regulations as may be necessary for the proper conduct of the business of the society, provided that these are in harmony with the constitution and by-laws.

### 13—MEETINGS OF COUNCIL.

Meetings of the council for the transaction of business may be called at any time by the president, and shall be called at the request in writing of three councillors. Unless for reasons of weight, at least ten days' notice of meetings shall be given. Five councillors shall constitute a quorum. A letter ballot of the council shall be taken on any question of importance, if so ordered by the presiding officer at any meeting, or at the request in writing of three councillors.

### 14—MEETINGS OF THE SOCIETY.

The council shall provide for regular stated meetings of the society, for the transaction of business, or for the reading or discussion of papers, to be held at such times and places as may best serve the interests of the society. Special meetings of the society, or of any section thereof, for a definite purpose, may be called by the president, or shall be called on a request in writing signed by twenty members. It shall not be in order at a special meeting to transact other business than that stated in the call for the meeting. Except for reasons of weight, at least thirty days' notice shall be given of all meetings. Except at annual meetings, ten members present in person or by proxy shall constitute a quorum. Resolutions endorsing or condemning matters of public or professional interest shall take the course prescribed for amendments to the constitution. Other matters may take the same course, by majority vote of members present at any meeting, or by direction of the presiding officer, or by vote of the council.

### 15—LOCAL OR PROFESSIONAL SECTIONS.

Local sections, or professional groups of members of the society, may be organized for social, scientific and professional purposes, in harmony with the constitution and by-laws, and such sections shall have only such powers, and shall act under such rules and regulations, as the council may from time to time approve.

### 16—SEALED LETTER BALLOTS.

When sealed letter ballots are required by the constitution or by-laws, the envelope to contain the ballot shall be so designed that

it can be signed on the outside by the voter for identification, and can afterward be opened by the tellers so as to preserve the secrecy of the ballot. The endorsement may take the form of a proxy, to be voted by the tellers appointed by the president, or by such other person, not a councillor, as the member may designate. The ballots signed and sealed shall be mailed or delivered to the secretary, who shall be responsible for their safe-keeping, and who shall endorse thereon the date and time of receipt and make record of such receipt on a list of members kept for the purpose. Any member shall have the privilege, at any time before the closing of the polls, of substituting another ballot, in which case the original shall be returned to him unopened. After the closing of the polls, the ballots, arranged in alphabetical order, with the check list of members above mentioned, shall be delivered by the secretary to tellers appointed by the president. The tellers shall verify the check list, and open and mix thoroughly the votes in such manner as to preserve the secrecy of the ballot. The ballots after being counted by the tellers, shall be destroyed, and the report of the tellers shall be the official record of the vote. In case a supplementary ballot shall be ordered for members failing to vote on the first ballot, the members whose votes have been counted shall not be permitted to vote a second time nor to change their original vote. The result of the ballot shall be communicated to the members of the society at such time and in such manner as the council shall determine, and shall be announced by the presiding officer at the next business meeting of the society and recorded on the minutes.

### 17—VOTE OF CONFIDENCE.

The council, by a two-fifths vote of its members, or upon request in writing of twenty per cent. of the members of the society, shall submit any question to the membership for a vote of confidence. Such vote must be taken within 30 days. In case such question is decided against the council, the members thereof shall forthwith resign office, their resignations to take effect on the election of their successors, and a new election of the whole executive council shall be immediately ordered to be conducted as provided in the by-laws. The new council shall by lot divide themselves into three classes to serve until the next annual meeting and for one and two years thereafter respectively.

### 18—AMENDMENTS TO BY-LAWS.

Amendments to the by-laws shall take the course provided for amendments to the constitution, save that when the letter ballot is taken a majority of the votes received within thirty days shall pass or defeat such amendments.

## RULES GOVERNING LOCAL SECTIONS.

1. Local sections of the society may be formed for promoting social intercourse among members, and for reading papers, and discussing subjects pertinent to the objects of the society, and not inconsistent with the constitution and by-laws of the society.

2. Such sections may be organized wherever there be ten members resident in any city or town or territory adjacent thereto, upon the request of seven or more of such members addressed to a councillor, who may thereupon call a meeting of members residing within the limits of the proposed section, and if not less than five members attend such meeting, they may thereupon organize such sections, elect officers, and adopt such rules and regulations for their local government, not inconsistent with the constitution and by-laws of the society, as they may deem proper, provided, that said rules and regulations shall forthwith be submitted to the executive council of the society and shall not become effective until approved by said executive council, and provided that all members of the society residing or engaged professionally in the district included by any section shall be invited to become members of said section, and provided that any such member, upon application and upon complying with the rules and regulations of said section, shall be admitted to membership therein, and provided that all expenses incurred by said section, except as noted below, shall be defrayed by said section. The society will pay, on request, two-thirds of the actual cost of stenographic reports of the meetings of any section, provided that the amount so paid does not exceed one-half the dues paid into the general treasury by the members of such section, nor exceed \$100 in any one year.

3. The proceedings of such sections, including papers and discussions, shall be reported to the secretary as hereinafter provided. No section shall, without the approval of the council of the society, permit any account of its proceedings or of its papers or discussions to be printed in any newspaper or technical publication, nor shall any such section print or publish any proceedings of its own without the assent and approval of said council, nor issue any printed matter except the necessary notices, etc., sent to members relating to the management of the section. No section shall at any time exercise any function other than those specified in this article, nor shall any section perform any act or deed which is properly a function of the society.

4. The geographical limits of any section shall not overlap areas desired to be included by other section or sections; such limits, when possible, shall be confined to the boundaries of a State or dis-



## MINING AND METALLURGICAL SOCIETY OF AMERICA

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trict, and shall be subject to such amendment or limitation as the council of the society may from time to time determine.

5. Meetings of the local sections for social, scientific, and professional purposes, shall be held within the week in which falls the fifteenth of each month, except July and August. Notices of the place and hour of all such meetings for the year shall be sent to every member of the society in such manner as the council may determine, but not less than a month before the September meeting.

6. It is recommended that these local meetings be preceded by an informal dinner or smoker.

7. The order of business at meetings of local sections shall be:

1. Reading of minutes of previous meeting.
2. Transaction of business.
3. Reading of paper on subject appointed by council.
4. Appointment by presiding officer of not more than three members to discuss said paper at next meeting.
5. Discussion of official paper read at previous meeting.
6. Reading and informal discussion of miscellaneous papers.

8. The paper and discussion on the subject appointed by the council shall be typewritten and in triplicate, one copy to be retained in the custody of the secretary of the local section, and two copies to be mailed that same evening or earlier to the general secretary.

9. On receipt of the papers and discussions from the local sections, the secretary shall mail one copy to the member appointed to edit the subject of the paper, and shall index and file the duplicate copy and be responsible for its safe-keeping.

10. Arrangements shall be made for the prompt publication of the material contributed from month to month in such form as the council may determine.

## LOCAL RULES.

### NEW YORK SECTION.

1. The officers of the New York Section of the Mining and Metallurgical Society of America shall be a chairman, a vice-chairman and a secretary, who shall be elected at the first meeting after the summer of each year, and shall hold office for one year from that time. These officers shall constitute the executive committee of the section.

2. The expenses incurred by the section shall be divided equally among all its members, and shall be payable at such times as the executive committee shall name.

## MINING AND METALLURGICAL SOCIETY OF AMERICA

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3. In the absence of the chairman and vice-chairman, the meeting shall elect a chairman *pro tem.* to serve at that meeting. In the absence of the secretary, the chairman shall appoint an acting secretary to serve for that meeting.

4. The secretary shall keep a record of the proceedings of the meetings, and immediately after each meeting shall forward to the general secretary of the society a report of the proceedings.

5. The presence of seven members of the section at a meeting shall constitute a quorum.

6. Members shall have the privilege of bringing guests to ordinary meetings of the section, but not to meetings previously announced as executive.

### PHILADELPHIA SECTION.

1. The officers of the Philadelphia Section of the Mining and Metallurgical Society of America shall be a chairman and a secretary, who shall be elected at the first meeting after the summer of each year, and shall hold office for one year after that time.

2. The expenses incurred by the section shall be equally divided among all members of the section, and shall be payable at such times as the chairman may name.

3. In the absence of the chairman, a meeting shall elect a chairman *pro tem.* to serve at that meeting. In the absence of the secretary, the chairman shall appoint an acting secretary to serve for that meeting.

4. The secretary shall keep a record of the proceedings of the meetings, and immediately after each meeting shall forward to the general secretary of the society a report of the proceedings.

5. The members of the section shall have the privilege of bringing guests to the meetings of the section.

# MINING AND METALLURGICAL SOCIETY OF AMERICA

## MEMBERS.

April 1, 1911.

Aldridge, W. H.	2026 Ellendale Pl., Los Angeles, Cal.
	Managing Director, Inspiration Copper Company.
Appleby, William R.	Minneapolis, Minn.
	Prof. of Metallurgy, State University.
Argall, Philip	First National Bank Bldg., Denver, Colo.
	Consulting Mining Engineer.
Austin, L. S.	251 W. 2d North St., Salt Lake City, Utah
	Consulting Metallurgist.
Bain, H. Foster	667 Howard St., San Francisco, Cal.
	Editor, <i>Mining and Scientific Press</i> .
Beard, J. T.	815 Sunset Ave., North Park, Scranton, Pa.
	Mining Engineer.
Beeler, H. C.	Boston Bldg., Denver, Colo.
	Consulting Mining Engineer.
Bellinger, Herman C.	Cobar, N. S. W.
	Consulting Metallurgical Engineer.
Bettles, Alfred J.	Newhouse Bldg., Salt Lake City, Utah
	Mining Engineer and Metallurgist.
Boutwell, J. M.	1323 de la Vina St., Santa Barbara, Cal.
	Mining Geologist.
Bradley, F. W.	Crocker Building, San Francisco, Cal.
	President, Bunker Hill and Sullivan M. & C. Co.
Branner, J. C.	Stanford University, Cal.
	Prof. of Geology and Vice-President, Stanford University.
Brayton, Corey C.	203 Hagelstein Bldg., Sacramento, Cal.
	Gen. Supt., Rock Crushing Dept., Natomas Cons. of Cal.
Brock, Reginald W.	Ottawa, Canada
	Director, Geological Survey of Canada.
Brooks, A. H.	Washington, D. C.
	Geologist, U. S. Geological Survey.
Brown, R. Gilman	62 London Wall, London, England
	Consulting Mining Engineer.
Buck, Stuart M.	Bramwell, W. Va.
	Mining Engineer.
Buckley, E. R.	Rolla, Mo.
	Geologist, Federal Lead Co.
Burch, Albert	Crocker Building, San Francisco, Cal.
	Mining Engineer.
Butters, Charles	333 Kearny St., San Francisco, Cal.
	Mining Engineer and Metallurgist.
Caetani, Gelasio	Crocker Building, San Francisco, Cal.
	Consulting Mining and Metallurgical Engineer.
Cairns, F. I.	Houghton, Mich.
	Supt., Michigan Smelting Co.
Chance, H. M.	819 Drexel Bldg., Philadelphia, Pa.
	Mining Engineer.
Catlin, Robert M.	Franklin Furnace, N. J.
	Engineer, New Jersey Zinc Co.
Channing, J. Parke	42 Broadway, New York City
	Consulting Mining Engineer.
Chase, Charles A.	921 Equitable Bldg., Denver, Colo.
	Consulting Mining Engineer.



# MINING AND METALLURGICAL SOCIETY OF AMERICA

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Chase, Edwin E.....	932 Equitable Bldg., Denver, Colo. Mining Engineer.
Chauvenet, S. H.....	Sheridan, Pa. Manager, Berkshire Iron Works.
Christy, S. B.....	Berkeley, Cal. Prof. of Mining and Metallurgy, University of California.
Claghorn, C. R.....	Tacoma, Wash. Gen. Mgr., Northwestern Improvement Co.
Clark, C. D.....	Hotel Westminster, Los Angeles, Cal. Mining Engineer.
Clark, W. B.....	Baltimore, Md. State Geologist, and Prof., Johns Hopkins University.
Clements, J. Morgan.....	42 Broadway, New York City Mining Geologist.
Cobb, Collier.....	Chapel Hill, N. C. Prof. of Geology, University of North Carolina.
Collins, George E.....	418 Boston Bldg., Denver, Colo. Consulting Engineer; Gen. Mgr., Argo Company.
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Crowell, Benedict.....	407 Perry-Payne Bldg., Cleveland, O. Consulting Mining Engineer.
Darton, N. H.....	Washington, D. C. Geologist, Bureau of Mines.
Derby, C. C.....	Nevada City, Cal. Mining Engineer.
d'Inwilliers, E. V.....	506 Walnut St., Philadelphia, Pa. Mining Engineer.
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Douglas, James Stuart.....	Douglas, Ariz. Mine Owner and Banker.
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Dufourcq, E. L.....	Produce Exchange Building, New York Mining Engineer.
Dumble, E. T.....	2003 Main St., Houston, Tex. Geologist.
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Easton, Stanly A.....	Kellogg, Idaho Mining Engineer; Mgr., Bunker Hill and Sullivan M. & C. Co.
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	Gen. Mgr., Miami Copper Co.
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Halberstadt, Baird.....	Pottsville, Pa.
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Hartranft, Samuel S.....	Norristown, Pa.
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Lawall, Elmer H.	Wilkesbarre, Pa.
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	Metallurgist.
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Mann, William S.....	La Portilla, Durango, Mex. Engineer, Pilonas Mining Co.
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Merrill, Chas. W.....	143 Second St., San Francisco, Cal Consulting Metallurgical Engineer.
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Metcalfe, G. W.....	Kennett, Cal. Manager, Mammoth Copper Mining Co.
Moore, P. N.....	611 Merchants' Laclede Bldg., St. Louis, Mo. Mining Engineer.
Morley, F. H.....	412 McPhee Bldg., Denver, Colo. Mining Engineer.
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Munro, Charles H.....	(354 Pine St., San Francisco) Nome, Alaska Gen. Mgr., Wild Goose Mining and Trading Co.
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Nichols, Ralph.....	Gilmore, Idaho Mining Engineer.
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Rogers, Allen H.....	201 Devonshire St., Boston, Mass. Consulting Mining Engineer.
Rohn, Oscar.....	Butte, Mont. Mining Engineer.
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Smith, Franklin W.....	Bisbee, Ariz. Consulting Mining Engineer.
Smith, George Otis.....	Washington, D. C. Director U. S. Geological Survey.
Smyth, H. L.....	Cambridge, Mass. Prof. of Mining and Metallurgy, Harvard University.
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Stone, George C.....	55 Wall St., New York City
	Chief Engineer, New Jersey Zinc Co.
Stonestreet, George D.....	Singer Bldg., New York City
	Consulting Mining Engineer.
Stoughton, Bradley.....	165 Broadway, New York City
	Consulting Metallurgical Engineer.
Stow, Audley H.....	Maybeury, W. Va.
	Division Engineer, Pocahontas Collieries Co.
Sussman, Otto.....	52 Broadway, New York City
	Consulting Mining Engineer.
Sutton, Linton B.....	165 Broadway, New York City
	Consulting Mining Engineer.
Thacher, Arthur.....	Roe Bldg., St. Louis, Mo.
	Mining Engineer.
Thompson, Heber S.....	Pottsville, Pa.
	Mining Engineer.
Townsend, Arthur Rodman.....	25 Broad St., New York City
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Turner, Henry W.....	709 Mills Bldg., San Francisco, Cal.
	Mining Geologist.
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Washington, Henry S.....	Singer Bldg., New York City
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	Consulting Mining Engineer.
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	Consulting Mining Engineer.
Welch, J. Cuthbert.....	Butte, Mont.
	Supt., East Butte Copper Mining Co.
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	Mgr., Commercial Mining Co.
Winchell, Alexander N.....	Madison, Wis.
	Prof. of Geology, University of Wisconsin.



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Wright, Louis A.....	42 Broadway, New York City Consulting Mining Engineer.
Yeatman, Pope.....	165 Broadway, New York City Mining Engineer.
Total Members.....	200

### DECEASED MEMBERS.

Blake, William P.....	Died May 22, 1910
Carpenter, Franklin R.....	Died April 1, 1910
Dudley, Charles B.....	Died Dec. 21, 1909
Forrester, Robert.....	Died Dec. 20, 1910
Shelby, Charles F.....	Died Jan. 25, 1911

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#### TREADWELL

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#### CORAM

White, R. T.

#### GRASS VALLEY

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Merrill, F. J. H.

Mudd, S. W.

Staunton, W. F.

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Waterman, D.

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Newson, J. F.

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### COLORADO

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Rickard, F.

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### CONNECTICUT

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Hoover, H. C.

Rickard, T. A.

Shockley, W. H.



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